

8/B

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<110> Sherman, D.H.
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Zhao, L.

<120> DNA encoding methymycin and pikromycin

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<140> US 09/988,384
<141> 2001-11-19

<150> PCT/US99/14398
<151> 1999-06-25

<150> US 09/105,537
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 Leu Asp Ser Leu Asp Leu Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro
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 65

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 Ala Trp Glu Ala Leu Glu Asp Ala Gly Ile Val Pro Gly Thr Leu Ala
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 <212> PRT
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<400> 4

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 35 40 45
 Thr Val Leu Arg Gly Gln Ala Asp Asp Pro Tyr Pro Ala Tyr Glu Arg
 50 55 60
 Val Arg Ala Arg Gly Ala Leu Ser Phe Ser Pro Thr Gly Ser Trp Val
 65 70 75 80
 Thr Ala Asp His Ala Leu Ala Ala Ser Ile Leu Cys Ser Thr Asp Phe
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 Gly Val Ser Gly Ala Asp Gly Val Pro Val Pro Gln Gln Val Leu Ser
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 Tyr Gly Glu Gly Cys Pro Leu Glu Arg Glu Gln Val Leu Pro Ala Ala
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 Gly Asp Val Pro Glu Gly Gly Gln Arg Ala Val Val Glu Gly Ile His
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 35 40 45
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 Gly Arg Arg Ala Gln Arg Leu Gly Ala Arg Thr Pro Gly His Val Thr
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 85 90 95
 Val Val Val Gly Asn Val Pro Phe His Leu Thr Thr Ala Ile Met Arg
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 Arg Leu Leu Asp Ala Gln His Trp His Thr Ala Val Leu Leu Val Gln
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 Trp Glu Val Ala Arg Arg Arg Ala Gly Val Gly Gly Ser Thr Leu Leu
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 Ala Leu Phe Ala Leu Glu Val Ala Leu Phe Arg Leu Val Glu Ser Trp
 3905 3910 3915 3920

Gly Met Arg Pro Ala Ala Leu Leu Gly His Ser Val Gly Glu Ile Ala
 3925 3930 3935
 Ala Ala His Val Ala Gly Val Phe Ser Leu Ala Asp Ala Ala Arg Leu
 3940 3945 3950
 Val Ala Ala Arg Gly Arg Leu Met Gln Glu Leu Pro Ala Gly Gly Ala
 3955 3960 3965
 Met Leu Ala Val Gln Ala Ala Glu Asp Glu Ile Arg Val Trp Leu Glu
 3970 3975 3980
 Thr Glu Glu Arg Tyr Ala Gly Arg Leu Asp Val Ala Ala Val Asn Gly
 3985 3990 3995 4000
 Pro Glu Ala Ala Val Leu Ser Gly Asp Ala Asp Ala Ala Arg Glu Ala
 4005 4010 4015
 Glu Ala Tyr Trp Ser Gly Leu Gly Arg Arg Thr Arg Ala Leu Arg Val
 4020 4025 4030
 Ser His Ala Phe His Ser Ala His Met Asp Gly Met Leu Asp Gly Phe
 4035 4040 4045
 Arg Ala Val Leu Glu Thr Val Glu Phe Arg Arg Pro Ser Leu Thr Val
 4050 4055 4060
 Val Ser Asn Val Thr Gly Leu Ala Ala Gly Pro Asp Asp Leu Cys Asp
 4065 4070 4075 4080
 Pro Glu Tyr Trp Val Arg His Val Arg Gly Thr Val Arg Phe Leu Asp
 4085 4090 4095
 Gly Val Arg Val Leu Arg Asp Leu Gly Val Arg Thr Cys Leu Glu Leu
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 Gly Pro Asp Gly Val Leu Thr Ala Met Ala Ala Asp Gly Leu Ala Asp
 4115 4120 4125
 Thr Pro Ala Asp Ser Ala Ala Gly Ser Pro Val Gly Ser Pro Ala Gly
 4130 4135 4140
 Ser Pro Ala Asp Ser Ala Ala Gly Ala Leu Arg Pro Arg Pro Leu Leu
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 Val Ala Leu Leu Arg Arg Lys Arg Ser Glu Thr Glu Thr Val Ala Asp
 4165 4170 4175
 Ala Leu Gly Arg Ala His Ala His Gly Thr Gly Pro Asp Trp His Ala
 4180 4185 4190
 Trp Phe Ala Gly Ser Gly Ala His Arg Val Asp Leu Pro Thr Tyr Ser
 4195 4200 4205
 Phe Arg Arg Asp Arg Tyr Trp Leu Asp Ala Pro Ala Ala Asp Thr Ala
 4210 4215 4220
 Val Asp Thr Ala Gly Leu Gly Leu Gly Thr Ala Asp His Pro Leu Leu
 4225 4230 4235 4240
 Gly Ala Val Val Ser Leu Pro Asp Arg Asp Gly Leu Leu Leu Thr Gly
 4245 4250 4255
 Arg Leu Ser Leu Arg Thr His Pro Trp Leu Ala Asp His Ala Val Leu
 4260 4265 4270
 Gly Ser Val Leu Leu Pro Gly Ala Ala Met Val Glu Leu Ala Ala His
 4275 4280 4285
 Ala Ala Glu Ser Ala Gly Leu Arg Asp Val Arg Glu Leu Thr Leu Leu
 4290 4295 4300
 Glu Pro Leu Val Leu Pro Glu His Gly Gly Val Glu Leu Arg Val Thr
 4305 4310 4315 4320
 Val Gly Ala Pro Ala Gly Glu Pro Gly Gly Glu Ser Ala Gly Asp Gly
 4325 4330 4335
 Ala Arg Pro Val Ser Leu His Ser Arg Leu Ala Asp Ala Pro Ala Gly
 4340 4345 4350
 Thr Ala Trp Ser Cys His Ala Thr Gly Leu Leu Ala Thr Asp Arg Pro
 4355 4360 4365
 Glu Leu Pro Val Ala Pro Asp Arg Ala Ala Met Trp Pro Pro Gln Gly
 4370 4375 4380
 Ala Glu Glu Val Pro Leu Asp Gly Leu Tyr Glu Arg Leu Asp Gly Asn
 4385 4390 4395 4400
 Gly Leu Ala Phe Gly Pro Leu Phe Gln Gly Leu Asn Ala Val Trp Arg
 4405 4410 4415

Tyr Glu Gly Glu Val Phe Ala Asp Ile Ala Leu Pro Ala Thr Thr Asn
 4420 4425 4430
 Ala Thr Ala Pro Ala Thr Ala Asn Gly Gly Gly Ser Ala Ala Ala Ala
 4435 4440 4445
 Pro Tyr Gly Ile His Pro Ala Leu Leu Asp Ala Ser Leu His Ala Ile
 4450 4455 4460
 Ala Val Gly Gly Leu Val Asp Glu Pro Glu Leu Val Arg Val Pro Phe
 4465 4470 4475 4480
 His Trp Ser Gly Val Thr Val His Ala Ala Gly Ala Ala Ala Ala Arg
 4485 4490 4495
 Val Arg Leu Ala Ser Ala Gly Thr Asp Ala Val Ser Leu Ser Leu Thr
 4500 4505 4510
 Asp Gly Glu Gly Arg Pro Leu Val Ser Val Glu Arg Leu Thr Leu Arg
 4515 4520 4525
 Pro Val Thr Ala Asp Gln Ala Ala Ala Ser Arg Val Gly Gly Leu Met
 4530 4535 4540
 His Arg Val Ala Trp Arg Pro Tyr Ala Leu Ala Ser Ser Gly Glu Gln
 4545 4550 4555 4560
 Asp Pro His Ala Thr Ser Tyr Gly Pro Thr Ala Val Leu Gly Lys Asp
 4565 4570 4575
 Glu Leu Lys Val Ala Ala Ala Leu Glu Ser Ala Gly Val Glu Val Gly
 4580 4585 4590
 Leu Tyr Pro Asp Leu Ala Ala Leu Ser Gln Asp Val Ala Ala Gly Ala
 4595 4600 4605
 Pro Ala Pro Arg Thr Val Leu Ala Pro Leu Pro Ala Gly Pro Ala Asp
 4610 4615 4620
 Gly Gly Ala Glu Gly Val Arg Gly Thr Val Ala Arg Thr Leu Glu Leu
 4625 4630 4635 4640
 Leu Gln Ala Trp Leu Ala Asp Glu His Leu Ala Gly Thr Arg Leu Leu
 4645 4650 4655
 Leu Val Thr Arg Gly Ala Val Arg Asp Pro Glu Gly Ser Gly Ala Asp
 4660 4665 4670
 Asp Gly Gly Glu Asp Leu Ser His Ala Ala Ala Trp Gly Leu Val Arg
 4675 4680 4685
 Thr Ala Gln Thr Glu Asn Pro Gly Arg Phe Gly Leu Leu Asp Leu Ala
 4690 4695 4700
 Asp Asp Ala Ser Ser Tyr Arg Thr Leu Pro Ser Val Leu Ser Asp Ala
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 Gly Leu Arg Asp Glu Pro Gln Leu Ala Leu His Asp Gly Thr Ile Arg
 4725 4730 4735
 Leu Ala Arg Leu Ala Ser Val Arg Pro Glu Thr Gly Thr Ala Ala Pro
 4740 4745 4750
 Ala Leu Ala Pro Glu Gly Thr Val Leu Leu Thr Gly Gly Thr Gly Gly
 4755 4760 4765
 Leu Gly Gly Leu Val Ala Arg His Val Val Gly Glu Trp Gly Val Arg
 4770 4775 4780
 Arg Leu Leu Leu Val Ser Arg Arg Gly Thr Asp Ala Pro Gly Ala Asp
 4785 4790 4795 4800
 Glu Leu Val His Glu Leu Glu Ala Leu Gly Ala Asp Val Ser Val Ala
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 Ala Cys Asp Val Ala Asp Arg Glu Ala Leu Thr Ala Val Leu Asp Ala
 4820 4825 4830
 Ile Pro Ala Glu His Pro Leu Thr Ala Val Val His Thr Ala Gly Val
 4835 4840 4845
 Leu Ser Asp Gly Thr Leu Pro Ser Met Thr Thr Glu Asp Val Glu His
 4850 4855 4860
 Val Leu Arg Pro Lys Val Asp Ala Ala Phe Leu Leu Asp Glu Leu Thr
 4865 4870 4875 4880
 Ser Thr Pro Ala Tyr Asp Leu Ala Ala Phe Val Met Phe Ser Ser Ala
 4885 4890 4895
 Ala Ala Val Phe Gly Gly Ala Gly Gln Gly Ala Tyr Ala Ala Asn
 4900 4905 4910

Ala Thr Leu Asp Ala Leu Ala Trp Arg Arg Arg Ala Ala Gly Leu Pro
 4915 4920 4925
 Ala Leu Ser Leu Gly Trp Gly Leu Trp Ala Glu Thr Ser Gly Met Thr
 4930 4935 4940
 Gly Glu Leu Gly Gln Ala Asp Leu Arg Arg Met Ser Arg Ala Gly Ile
 4945 4950 4955 4960
 Gly Gly Ile Ser Asp Ala Glu Gly Ile Ala Leu Leu Asp Ala Ala Leu
 4965 4970 4975
 Arg Asp Asp Arg His Pro Val Leu Leu Pro Leu Arg Leu Asp Ala Ala
 4980 4985 4990
 Gly Leu Arg Asp Ala Ala Gly Asn Asp Pro Ala Gly Ile Pro Ala Leu
 4995 5000 5005
 Phe Arg Asp Val Val Gly Ala Arg Thr Val Arg Ala Arg Pro Ser Ala
 5010 5015 5020
 Ala Ser Ala Ser Thr Thr Ala Gly Thr Ala Gly Thr Pro Gly Thr Ala
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 Asp Gly Ala Ala Glu Thr Ala Ala Val Thr Leu Ala Asp Arg Ala Ala
 5045 5050 5055
 Thr Val Asp Gly Pro Ala Arg Gln Arg Leu Leu Glu Phe Val Val
 5060 5065 5070
 Gly Glu Val Ala Glu Val Leu Gly His Ala Arg Gly His Arg Ile Asp
 5075 5080 5085
 Ala Glu Arg Gly Phe Leu Asp Leu Gly Phe Asp Ser Leu Thr Ala Val
 5090 5095 5100
 Glu Leu Arg Asn Arg Leu Asn Ser Ala Gly Gly Leu Ala Leu Pro Ala
 5105 5110 5115 5120
 Thr Leu Val Phe Asp His Pro Ser Pro Ala Ala Leu Ala Ser His Leu
 5125 5130 5135
 Asp Ala Glu Leu Pro Arg Gly Ala Ser Asp Gln Asp Gly Ala Gly Asn
 5140 5145 5150
 Arg Asn Gly Asn Glu Asn Gly Thr Thr Ala Ser Arg Ser Thr Ala Glu
 5155 5160 5165
 Thr Asp Ala Leu Leu Ala Gln Leu Thr Arg Leu Glu Gly Ala Leu Val
 5170 5175 5180
 Leu Thr Gly Leu Ser Asp Ala Pro Gly Ser Glu Glu Val Leu Glu His
 5185 5190 5195 5200
 Leu Arg Ser Leu Arg Ser Met Val Thr Gly Glu Thr Gly Thr Gly Thr
 5205 5210 5215
 Ala Ser Gly Ala Pro Asp Gly Ala Gly Ser Gly Ala Glu Asp Arg Pro
 5220 5225 5230
 Trp Ala Ala Gly Asp Gly Ala Gly Gly Ser Glu Asp Gly Ala Gly
 5235 5240 5245
 Val Pro Asp Phe Met Asn Ala Ser Ala Glu Glu Leu Phe Gly Leu Leu
 5250 5255 5260
 Asp Gln Asp Pro Ser Thr Asp Met Ser Thr Val Asn Glu Glu Lys Tyr
 5265 5270 5275 5280
 Leu Asp Tyr Leu Arg Arg Ala Thr Ala Asp Leu His Glu Ala Arg Gly
 5285 5290 5295
 Arg Leu Arg Glu Leu Glu Ala Lys Ala Gly Glu Pro Val Ala Ile Val
 5300 5305 5310
 Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Glu Asp Leu
 5315 5320 5325
 Trp Arg Leu Val Ala Gly Gly Glu Asp Ala Ile Ser Glu Phe Pro Gln
 5330 5335 5340
 Asp Arg Gly Trp Asp Val Glu Gly Leu Tyr Asp Pro Asn Pro Glu Ala
 5345 5350 5355 5360
 Thr Gly Lys Ser Tyr Ala Arg Glu Ala Gly Phe Leu Tyr Glu Ala Gly
 5365 5370 5375
 Glu Phe Asp Ala Asp Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala
 5380 5385 5390
 Met Asp Pro Gln Gln Arg Leu Leu Glu Ala Ser Trp Glu Ala Phe
 5395 5400 5405

Glu His Ala Gly Ile Pro Ala Ala Thr Ala Arg Gly Thr Ser Val Gly
 5410 5415 5420
 Val Phe Thr Gly Val Met Tyr His Asp Tyr Ala Thr Arg Leu Thr Asp
 5425 5430 5435 5440
 Val Pro Glu Gly Ile Glu Gly Tyr Leu Gly Thr Gly Asn Ser Gly Ser
 5445 5450 5455
 Val Ala Ser Gly Arg Val Ala Tyr Thr Leu Gly Leu Glu Gly Pro Ala
 5460 5465 5470
 Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu
 5475 5480 5485
 Ala Val Gln Ala Leu Arg Lys Gly Glu Val Asp Met Ala Leu Ala Gly
 5490 5495 5500
 Gly Val Thr Val Met Ser Thr Pro Ser Thr Phe Val Glu Phe Ser Arg
 5505 5510 5515 5520
 Gln Arg Gly Leu Ala Pro Asp Gly Arg Ser Lys Ser Phe Ser Ser Thr
 5525 5530 5535
 Ala Asp Gly Thr Ser Trp Ser Glu Gly Val Gly Val Leu Val Glu
 5540 5545 5550
 Arg Leu Ser Asp Ala Arg Arg Lys Gly His Arg Ile Leu Ala Val Val
 5555 5560 5565
 Arg Gly Thr Ala Val Asn Gln Asp Gly Ala Ser Ser Gly Leu Thr Ala
 5570 5575 5580
 Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Arg Ala Leu Ala Asp
 5585 5590 5595 5600
 Ala Arg Leu Thr Thr Ser Asp Val Asp Val Val Glu Ala His Gly Thr
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 Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Val Ile Ala Thr
 5620 5625 5630
 Tyr Gly Gln Gly Arg Asp Gly Glu Gln Pro Leu Arg Leu Gly Ser Leu
 5635 5640 5645
 Lys Ser Asn Ile Gly His Thr Gln Ala Ala Gly Val Ser Gly Val
 5650 5655 5660
 Ile Lys Met Val Gln Ala Met Arg His Gly Val Leu Pro Lys Thr Leu
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 His Val Glu Lys Pro Thr Asp Gln Val Asp Trp Ser Ala Gly Ala Val
 5685 5690 5695
 Glu Leu Leu Thr Glu Ala Met Asp Trp Pro Asp Lys Gly Asp Gly Gly
 5700 5705 5710
 Leu Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala
 5715 5720 5725
 His Val Val Leu Glu Glu Ala Pro Ala Ala Glu Glu Thr Pro Ala Ser
 5730 5735 5740
 Glu Ala Thr Pro Ala Val Glu Pro Ser Val Gly Ala Gly Leu Val Pro
 5745 5750 5755 5760
 Trp Leu Val Ser Ala Lys Thr Pro Ala Ala Leu Asp Ala Gln Ile Gly
 5765 5770 5775
 Arg Leu Ala Ala Phe Ala Ser Gln Gly Arg Thr Asp Ala Ala Asp Pro
 5780 5785 5790
 Gly Ala Val Ala Arg Val Leu Ala Gly Gly Arg Ala Glu Phe Glu His
 5795 5800 5805
 Arg Ala Val Val Leu Gly Thr Gly Gln Asp Asp Phe Ala Gln Ala Leu
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 Thr Ala Pro Glu Gly Leu Ile Arg Gly Thr Pro Ser Asp Val Gly Arg
 5825 5830 5835 5840
 Val Ala Phe Val Phe Pro Gly Gln Gly Thr Gln Trp Ala Gly Met Gly
 5845 5850 5855
 Ala Glu Leu Leu Asp Val Ser Lys Glu Phe Ala Ala Ala Met Ala Glu
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 Cys Glu Ser Ala Leu Ser Arg Tyr Val Asp Trp Ser Leu Glu Ala Val
 5875 5880 5885
 Val Arg Gln Ala Pro Gly Ala Pro Thr Leu Glu Arg Val Asp Val Val
 5890 5895 5900

Gln Pro Val Thr Phe Ala Val Met Val Ser Leu Ala Lys Val Trp Gln
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 His His Gly Val Thr Pro Gln Ala Val Val Gly His Ser Gln Gly Glu
 5925 5930 5935
 Ile Ala Ala Ala Tyr Val Ala Gly Ala Leu Thr Leu Asp Asp Ala Ala
 5940 5945 5950
 Arg Val Val Thr Leu Arg Ser Lys Ser Ile Ala Ala His Leu Ala Gly
 5955 5960 5965
 Lys Gly Gly Met Ile Ser Leu Ala Leu Ser Glu Glu Ala Thr Arg Gln
 5970 5975 5980
 Arg Ile Glu Asn Leu His Gly Leu Ser Ile Ala Ala Val Asn Gly Pro
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 Thr Ala Thr Val Val Ser Gly Asp Pro Thr Gln Ile Gln Glu Leu Ala
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 Gln Ala Cys Glu Ala Asp Gly Val Arg Ala Arg Ile Ile Pro Val Asp
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 Tyr Ala Ser His Ser Ala His Val Glu Thr Ile Glu Ser Glu Leu Ala
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 Glu Val Leu Ala Gly Leu Ser Pro Arg Thr Pro Glu Val Pro Phe Phe
 6050 6055 6060
 Ser Thr Leu Glu Gly Ala Trp Ile Thr Glu Pro Val Leu Asp Gly Thr
 6065 6070 6075 6080
 Tyr Trp Tyr Arg Asn Leu Arg His Arg Val Gly Phe Ala Pro Ala Val
 6085 6090 6095
 Glu Thr Leu Ala Thr Asp Glu Gly Phe Thr His Phe Ile Glu Val Ser
 6100 6105 6110
 Ala His Pro Val Leu Thr Met Thr Leu Pro Glu Thr Val Thr Gly Leu
 6115 6120 6125
 Gly Thr Leu Arg Arg Glu Gln Gly Gly Gln Glu Arg Leu Val Thr Ser
 6130 6135 6140
 Leu Ala Glu Ala Trp Thr Asn Gly Leu Thr Ile Asp Trp Ala Pro Val
 6145 6150 6155 6160
 Leu Pro Thr Ala Thr Gly His His Pro Glu Leu Pro Thr Tyr Ala Phe
 6165 6170 6175
 Gln Arg Arg His Tyr Trp Leu His Asp Ser Pro Ala Val Gln Gly Ser
 6180 6185 6190
 Val Gln Asp Ser Trp Arg Tyr Arg Ile Asp Trp Lys Arg Leu Ala Val
 6195 6200 6205
 Ala Asp Ala Ser Glu Arg Ala Gly Leu Ser Gly Arg Trp Leu Val Val
 6210 6215 6220
 Val Pro Glu Asp Arg Ser Ala Glu Ala Ala Pro Val Leu Ala Ala Leu
 6225 6230 6235 6240
 Ser Gly Ala Gly Ala Asp Pro Val Gln Leu Asp Val Ser Pro Leu Gly
 6245 6250 6255
 Asp Arg Gln Arg Leu Ala Ala Thr Leu Gly Glu Ala Leu Ala Ala Ala
 6260 6265 6270
 Gly Gly Ala Val Asp Gly Val Leu Ser Leu Leu Ala Trp Asp Glu Ser
 6275 6280 6285
 Ala His Pro Gly His Pro Ala Pro Phe Thr Arg Gly Thr Gly Ala Thr
 6290 6295 6300
 Leu Thr Leu Val Gln Ala Leu Glu Asp Ala Gly Val Ala Ala Pro Leu
 6305 6310 6315 6320
 Trp Cys Val Thr His Gly Ala Val Ser Val Gly Arg Ala Asp His Val
 6325 6330 6335
 Thr Ser Pro Ala Gln Ala Met Val Trp Gly Met Gly Arg Val Ala Ala
 6340 6345 6350
 Leu Glu His Pro Glu Arg Trp Gly Gly Leu Ile Asp Leu Pro Ser Asp
 6355 6360 6365
 Ala Asp Arg Ala Ala Leu Asp Arg Met Thr Thr Val Leu Ala Gly Gly
 6370 6375 6380
 Thr Gly Glu Asp Gln Val Ala Val Arg Ala Ser Gly Leu Leu Ala Arg
 6385 6390 6395 6400

Arg Leu Val Arg Ala Ser Leu Pro Ala His Gly Thr Ala Ser Pro Trp
 6405 6410 6415
 Trp Gln Ala Asp Gly Thr Val Leu Val Thr Gly Ala Glu Glu Pro Ala
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 Ala Ala Glu Ala Ala Arg Arg Leu Ala Arg Asp Gly Ala Gly His Leu
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 Leu Leu His Thr Thr Pro Ser Gly Ser Glu Gly Ala Glu Gly Thr Ser
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 Gly Ala Ala Glu Asp Ser Gly Leu Ala Gly Leu Val Ala Glu Leu Ala
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 Asp Leu Gly Ala Thr Ala Thr Val Val Thr Cys Asp Leu Thr Asp Ala
 6485 6490 6495
 Glu Ala Ala Ala Arg Leu Leu Ala Gly Val Ser Asp Ala His Pro Leu
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 Ser Ala Val Leu His Leu Pro Pro Thr Val Asp Ser Glu Pro Leu Ala
 6515 6520 6525
 Ala Thr Asp Ala Asp Ala Leu Ala Arg Val Val Thr Ala Lys Ala Thr
 6530 6535 6540
 Ala Ala Leu His Leu Asp Arg Leu Leu Arg Glu Ala Ala Ala Gly
 6545 6550 6555 6560
 Gly Arg Pro Pro Val Leu Val Leu Phe Ser Ser Val Ala Ala Ile Trp
 6565 6570 6575
 Gly Gly Ala Gly Gln Gly Ala Tyr Ala Ala Gly Thr Ala Phe Leu Asp
 6580 6585 6590
 Ala Leu Ala Gly Gln His Arg Ala Asp Gly Pro Thr Val Thr Ser Val
 6595 6600 6605
 Ala Trp Ser Pro Trp Glu Gly Ser Arg Val Thr Glu Gly Ala Thr Gly
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 Glu Arg Leu Arg Arg Leu Gly Leu Arg Pro Leu Ala Pro Ala Thr Ala
 6625 6630 6635 6640
 Leu Thr Ala Leu Asp Thr Ala Leu Gly His Gly Asp Thr Ala Val Thr
 6645 6650 6655
 Ile Ala Asp Val Asp Trp Ser Ser Phe Ala Pro Gly Phe Thr Thr Ala
 6660 6665 6670
 Arg Pro Gly Thr Leu Leu Ala Asp Leu Pro Glu Ala Arg Arg Ala Leu
 6675 6680 6685
 Asp Glu Gln Gln Ser Thr Thr Ala Ala Asp Asp Thr Val Leu Ser Arg
 6690 6695 6700
 Glu Leu Gly Ala Leu Thr Gly Ala Glu Gln Gln Arg Arg Met Gln Glu
 6705 6710 6715 6720
 Leu Val Arg Glu His Leu Ala Val Val Leu Asn His Pro Ser Pro Glu
 6725 6730 6735
 Ala Val Asp Thr Gly Arg Ala Phe Arg Asp Leu Gly Phe Asp Ser Leu
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 Thr Ala Val Glu Leu Arg Asn Arg Leu Lys Asn Ala Thr Gly Leu Ala
 6755 6760 6765
 Leu Pro Ala Thr Leu Val Phe Asp Tyr Pro Thr Pro Arg Thr Leu Ala
 6770 6775 6780
 Glu Phe Leu Leu Ala Glu Ile Leu Gly Glu Gln Ala Gly Ala Gly Glu
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 Gln Leu Pro Val Asp Gly Gly Val Asp Asp Glu Pro Val Ala Ile Val
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 Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Glu Asp Leu
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 Trp Arg Leu Val Ala Gly Gly Glu Asp Ala Ile Ser Gly Phe Pro Gln
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 Asp Arg Gly Trp Asp Val Glu Gly Leu Tyr Asp Pro Asp Pro Asp Ala
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 Ser Gly Arg Thr Tyr Cys Arg Ala Gly Gly Phe Leu Asp Glu Ala Gly
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 Glu Phe Asp Ala Asp Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala
 6885 6890 6895

Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Val
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 Glu Asp Ala Gly Ile Asp Pro Thr Ser Leu Gln Gly Gln Gln Val Gly
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 Val Phe Ala Gly Thr Asn Gly Pro His Tyr Glu Pro Leu Leu Arg Asn
 6930 6935 6940
 Thr Ala Glu Asp Leu Glu Gly Tyr Val Gly Thr Gly Asn Ala Ala Ser
 6945 6950 6955 6960
 Ile Met Ser Gly Arg Val Ser Tyr Thr Leu Gly Leu Glu Gly Pro Ala
 6965 6970 6975
 Val Thr Val Asp Thr Ala Cys Ser Ser Leu Val Ala Leu His Leu
 6980 6985 6990
 Ala Val Gln Ala Leu Arg Lys Gly Glu Cys Gly Leu Ala Leu Ala Gly
 6995 7000 7005
 Gly Val Thr Val Met Ser Thr Pro Thr Thr Phe Val Glu Phe Ser Arg
 7010 7015 7020
 Gln Arg Gly Leu Ala Glu Asp Gly Arg Ser Lys Ala Phe Ala Ala Ser
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 Ala Asp Gly Phe Gly Pro Ala Glu Gly Val Gly Met Leu Leu Val Glu
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 Arg Leu Ser Asp Ala Arg Arg Asn Gly His Arg Val Leu Ala Val Val
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 Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala
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 Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Arg Ala Leu Ala Asp
 7090 7095 7100
 Ala Arg Leu Thr Thr Ala Asp Val Val Val Glu Ala His Gly Thr
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 Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Ile Ala Thr
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 Tyr Gly Gln Gly Arg Asp Thr Glu Gln Pro Leu Arg Leu Gly Ser Leu
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 Lys Ser Asn Ile Gly His Thr Gln Ala Ala Ala Gly Val Ser Gly Ile
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 Ile Lys Met Val Gln Ala Met Arg His Gly Val Leu Pro Lys Thr Leu
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 His Val Asp Arg Pro Ser Asp Gln Ile Asp Trp Ser Ala Gly Thr Val
 7185 7190 7195 7200
 Glu Leu Leu Thr Glu Ala Met Asp Trp Pro Arg Lys Gln Glu Gly Gly
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 Leu Arg Arg Ala Ala Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala
 7220 7225 7230
 His Ile Val Leu Glu Glu Ala Pro Val Asp Glu Asp Ala Pro Ala Asp
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 Glu Pro Ser Val Gly Gly Val Val Pro Trp Leu Val Ser Ala Lys Thr
 7250 7255 7260
 Pro Ala Ala Leu Asp Ala Gln Ile Gly Arg Leu Ala Ala Phe Ala Ser
 7265 7270 7275 7280
 Gln Gly Arg Thr Asp Ala Ala Asp Pro Gly Ala Val Ala Arg Val Leu
 7285 7290 7295
 Ala Gly Gly Arg Ala Gln Phe Glu His Arg Ala Val Ala Leu Gly Thr
 7300 7305 7310
 Gly Gln Asp Asp Leu Ala Ala Ala Leu Ala Ala Pro Glu Gly Leu Val
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 Arg Gly Val Ala Ser Gly Val Gly Arg Val Ala Phe Val Phe Pro Gly
 7330 7335 7340
 Gln Gly Thr Gln Trp Ala Gly Met Gly Ala Glu Leu Leu Asp Val Ser
 7345 7350 7355 7360
 Lys Glu Phe Ala Ala Ala Met Ala Glu Cys Glu Ala Ala Leu Ala Pro
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 Tyr Val Asp Trp Ser Leu Glu Ala Val Val Arg Gln Ala Pro Gly Ala
 7380 7385 7390

Pro Thr Leu Glu Arg Val Asp Val Val Gln Pro Val Thr Phe Ala Val
 7395 7400 7405
 Met Val Ser Leu Ala Lys Val Trp Gln His His Gly Val Thr Pro Gln
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 Ala Val Val Gly His Ser Gln Gly Glu Ile Ala Ala Ala Tyr Val Ala
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 Gly Ala Leu Ser Leu Asp Asp Ala Ala Arg Val Val Thr Leu Arg Ser
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 Lys Ser Ile Gly Ala His Leu Ala Gly Gln Gly Gly Met Leu Ser Leu
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 Ala Leu Ser Glu Ala Ala Val Val Glu Arg Leu Ala Gly Phe Asp Gly
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 Leu Ser Val Ala Ala Val Asn Gly Pro Thr Ala Thr Val Val Ser Gly
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 Asp Pro Thr Gln Ile Gln Glu Leu Ala Gln Ala Cys Glu Ala Asp Gly
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 Val Glu Thr Ile Glu Ser Glu Leu Ala Asp Val Leu Ala Gly Leu Ser
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 Pro Gln Thr Pro Gln Val Pro Phe Phe Ser Thr Leu Glu Gly Ala Trp
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 Ile Thr Glu Pro Ala Leu Asp Gly Gly Tyr Trp Tyr Arg Asn Leu Arg
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 His Arg Val Gly Phe Ala Pro Ala Val Glu Thr Leu Ala Thr Asp Glu
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 Gly Phe Thr His Phe Val Glu Val Ser Ala His Pro Val Leu Thr Met
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 Ala Leu Pro Glu Thr Val Thr Gly Leu Gly Thr Leu Arg Arg Asp Asn
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 Gly Gly Gln His Arg Leu Thr Thr Ser Leu Ala Glu Ala Trp Ala Asn
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 Gly Leu Thr Val Asp Trp Ala Ser Leu Leu Pro Thr Thr Thr His
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 Pro Asp Leu Pro Thr Tyr Ala Phe Gln Thr Glu Arg Tyr Trp Pro Gln
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 Pro Asp Leu Ser Ala Ala Gly Asp Ile Thr Ser Ala Gly Leu Gly Ala
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 Ala Glu His Pro Leu Leu Gly Ala Ala Val Ala Leu Ala Asp Ser Asp
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 Gly Cys Leu Leu Thr Gly Ser Leu Ser Leu Arg Thr His Pro Trp Leu
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 Ala Asp His Ala Val Ala Gly Thr Val Leu Leu Pro Gly Thr Ala Phe
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 Val Glu Leu Ala Phe Arg Ala Gly Asp Gln Val Gly Cys Asp Leu Val
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 Glu Glu Leu Thr Leu Asp Ala Pro Leu Val Leu Pro Arg Arg Gly Ala
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 Val Arg Val Gln Leu Ser Val Gly Ala Ser Asp Glu Ser Gly Arg Arg
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 Thr Phe Gly Leu Tyr Ala His Pro Glu Asp Ala Pro Gly Glu Ala Glu
 7795 7800 7805
 Trp Thr Arg His Ala Thr Gly Val Leu Ala Ala Arg Ala Asp Arg Thr
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 Ala Pro Val Ala Asp Pro Glu Ala Trp Pro Pro Gly Ala Glu Pro
 7825 7830 7835 7840
 Val Asp Val Asp Gly Leu Tyr Glu Arg Phe Ala Ala Asn Gly Tyr Gly
 7845 7850 7855
 Tyr Gly Pro Leu Phe Gln Gly Val Arg Gly Val Trp Arg Arg Gly Asp
 7860 7865 7870
 Glu Val Phe Ala Asp Val Ala Leu Pro Ala Glu Val Ala Gly Ala Glu
 7875 7880 7885

Gly Ala Arg Phe Gly Leu His Pro Ala Leu Leu Asp Ala Ala Val Gln
 7890 7895 7900
 Ala Ala Gly Ala Gly Arg Gly Val Arg Arg Gly His Ala Ala Ala Val
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 Arg Leu Glu Arg Asp Leu Leu Tyr Ala Val Gly Ala Thr Ala Leu Arg
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 Val Arg Leu Ala Pro Ala Gly Pro Asp Thr Val Ser Val Ser Ala Ala
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 Asp Ser Ser Gly Gln Pro Val Phe Ala Ala Asp Ser Leu Thr Val Leu
 7955 7960 7965
 Pro Val Asp Pro Ala Gln Leu Ala Ala Phe Ser Asp Pro Thr Leu Asp
 7970 7975 7980
 Ala Leu His Leu Leu Glu Trp Thr Ala Trp Asp Gly Ala Ala Gln Ala
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 Leu Pro Gly Ala Val Val Leu Gly Gly Asp Ala Asp Gly Leu Ala Ala
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 Ala Leu Arg Ala Gly Gly Thr Glu Val Leu Ser Phe Pro Asp Leu Thr
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 Asp Leu Val Glu Ala Val Asp Arg Gly Glu Thr Pro Ala Pro Ala Thr
 8035 8040 8045
 Val Leu Val Ala Cys Pro Ala Ala Gly Pro Asp Gly Pro Glu His Val
 8050 8055 8060
 Arg Glu Ala Leu His Gly Ser Leu Ala Leu Met Gln Ala Trp Leu Ala
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 Asp Glu Arg Phe Thr Asp Gly Arg Leu Val Leu Val Thr Arg Asp Ala
 8085 8090 8095
 Val Ala Ala Arg Ser Gly Asp Gly Leu Arg Ser Thr Gly Gln Ala Ala
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 Val Trp Gly Leu Gly Arg Ser Ala Gln Thr Glu Ser Pro Gly Arg Phe
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 Val Leu Leu Asp Leu Ala Gly Glu Ala Arg Thr Ala Gly Asp Ala Thr
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 Ala Gly Asp Gly Leu Thr Thr Gly Asp Ala Thr Val Gly Gly Thr Ser
 8145 8150 8155 8160
 Gly Asp Ala Ala Leu Gly Ser Ala Leu Ala Thr Ala Leu Gly Ser Gly
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 Glu Pro Gln Leu Ala Leu Arg Asp Gly Ala Leu Leu Val Pro Arg Leu
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 Ala Arg Ala Ala Ala Pro Ala Ala Asp Gly Leu Ala Ala Ala Asp
 8195 8200 8205
 Gly Leu Ala Ala Leu Pro Leu Pro Ala Ala Pro Ala Leu Trp Arg Leu
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 Glu Pro Gly Thr Asp Gly Ser Leu Glu Ser Leu Thr Ala Ala Pro Gly
 8225 8230 8235 8240
 Asp Ala Glu Thr Leu Ala Pro Glu Pro Leu Gly Pro Gly Gln Val Arg
 8245 8250 8255
 Ile Ala Ile Arg Ala Thr Gly Leu Asn Phe Arg Asp Val Leu Ile Ala
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 Leu Gly Met Tyr Pro Asp Pro Ala Leu Met Gly Thr Glu Gly Ala Gly
 8275 8280 8285
 Val Val Thr Ala Thr Gly Pro Gly Val Thr His Leu Ala Pro Gly Asp
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Phe	Asp	Gln	Pro	Leu	Leu	Val	Gly	Arg	Pro	Asn	Arg	Ile	Asp	Arg	Ala
								20		25			30		
Arg	Leu	Tyr	Glu	Arg	Leu	Asp	Arg	Ala	Leu	Asp	Ser	Gln	Trp	Leu	Ser
								35		40		45			
Asn	Gly	Gly	Pro	Leu	Val	Arg	Glu	Phe	Glu	Glu	Arg	Val	Ala	Gly	Leu
								50		55		60			
Ala	Gly	Val	Arg	His	Ala	Val	Ala	Thr	Cys	Asn	Ala	Thr	Ala	Gly	Leu
								65		70		75		80	
Gln	Leu	Leu	Ala	His	Ala	Gly	Leu	Thr	Gly	Glu	Val	Ile	Met	Pro	
								85		90		95			
Ser	Met	Thr	Phe	Ala	Ala	Thr	Pro	His	Ala	Leu	Arg	Trp	Ile	Gly	Leu
								100		105		110			
Thr	Pro	Val	Phe	Ala	Asp	Ile	Asp	Pro	Asp	Thr	Gly	Asn	Leu	Asp	Pro
								115		120		125			
Asp	Gln	Val	Ala	Ala	Ala	Val	Thr	Pro	Arg	Thr	Ser	Ala	Val	Val	Gly
								130		135		140			
Val	His	Leu	Trp	Gly	Arg	Pro	Cys	Ala	Ala	Asp	Gln	Leu	Arg	Lys	Val
								145		150		155		160	
Ala	Asp	Glu	His	Gly	Leu	Arg	Leu	Tyr	Phe	Asp	Ala	Ala	His	Ala	Leu
								165		170		175			
Gly	Cys	Ala	Val	Asp	Gly	Arg	Pro	Ala	Gly	Ser	Leu	Gly	Asp	Ala	Glu
								180		185		190			
Val	Phe	Ser	Phe	His	Ala	Thr	Lys	Ala	Val	Asn	Ala	Phe	Glu	Gly	
								195		200		205			
Ala	Val	Val	Thr	Asp	Asp	Ala	Asp	Leu	Ala	Ala	Arg	Ile	Arg	Ala	Leu
								210		215		220			
His	Asn	Phe	Gly	Phe	Asp	Leu	Pro	Gly	Gly	Ser	Pro	Ala	Gly	Thr	
								225		230		235		240	
Asn	Ala	Lys	Met	Ser	Glu	Ala	Ala	Ala	Ala	Met	Gly	Leu	Thr	Ser	Leu
								245		250		255			
Asp	Ala	Phe	Pro	Glu	Val	Ile	Asp	Arg	Asn	Arg	Arg	Asn	His	Ala	Ala
								260		265		270			
Tyr	Arg	Glu	His	Leu	Ala	Asp	Leu	Pro	Gly	Val	Leu	Val	Ala	Asp	His
								275		280		285			
Asp	Arg	His	Gly	Leu	Asn	Asn	His	Gln	Tyr	Val	Ile	Val	Glu	Ile	Asp
								290		295		300			
Glu	Ala	Thr	Thr	Gly	Ile	His	Arg	Asp	Leu	Val	Met	Glu	Val	Leu	Lys
								305		310		315		320	
Ala	Glu	Gly	Val	His	Thr	Arg	Ala	Tyr	Phe	Ser	Pro	Gly	Cys	His	Glu
								325		330		335			
Leu	Glu	Pro	Tyr	Arg	Gly	Gln	Pro	His	Ala	Pro	Leu	Pro	His	Thr	Glu
								340		345		350			

Arg	Leu	Ala	Ala	Arg	Val	Leu	Ser	Leu	Pro	Thr	Gly	Thr	Ala	Ile	Gly
355						360					365				
Asp	Asp	Asp	Ile	Arg	Arg	Val	Ala	Asp	Leu	Leu	Arg	Leu	Cys	Ala	Thr
370						375					380				
Arg	Gly	Arg	Glu	Leu	Thr	Ala	Arg	His	Arg	Asp	Thr	Ala	Pro	Ala	Pro
385						390				395				400	
Leu	Ala	Ala	Pro	Gln	Thr	Ser	Thr	Pro	Thr	Ile	Gly	Arg	Ser	Arg	
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<210> 9
 <211> 1458
 <212> DNA
 <213> Streptomyces venezuelae

<400> 9															
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cccgacgagg	ccggAACGAC	cggccgcac	ctcgccggc	tgcgcgtgcg	ctacggcaac	180									
agccccttca	cccccgcttga	ggaggcccg	cacgacctgg	gcgtcgaccg	ggacgccttc	240									
cggcgccctcc	tcgcccgtt	cgggcaggtc	ccggagactcc	gcaccgcggt	cgagaccggc	300									
cccgccgggg	cgtactggaa	gaacaccctg	ctcccgcgtcg	aacagcgcgg	cgttttcgac	360									
gccccgcgtcg	ccaggaagcc	cgtttcccg	tacagcgtcg	gcctctaccc	cgccccgacc	420									
tgcatgttcc	gctgccactt	ctgcgtccgt	gtgaccggcg	cccgctacga	cccgctccgccc	480									
ctcgacgccc	gcaacgcatt	gttccgggtcg	gtcatcgacg	agataccgc	gggcaaccccc	540									
tcggcgatgt	acttctccgg	cggcctggag	ccgctcacca	accccggcct	cgggagcctg	600									
gccccgcacg	ccaccgacca	cggcctgcgg	cccaccgtct	acacgaactc	cttcgcgcctc	660									
accgagcgc	ccctggagcg	ccagccggc	ctctggggcc	tgcacgcccatt	ccgcacactcg	720									
ctctacggcc	tcaacgacga	ggagtacgag	cagaccaccc	gcaagaaggc	cgccttccgc	780									
cgcgtcccg	agaacactcg	ccgcttccag	cagctgcgcg	ccgagcgcga	gtcgcgcgatc	840									
aacctcggt	tcgcctacat	cgtgctcccg	ggccgtgcct	ccgcctgtct	cgacctggtc	900									
gacttcatcg	ccgacactaa	cgacgcccgg	cagggcagga	cgatcgactt	cgtaaacatt	960									
cgcgaggact	acagcggccg	tgacgacggc	aagctccgc	aggaggagcg	ggccgagctc	1020									
caggaggccc	tcaacgcctt	cgaggagcgg	gtccgcgagc	gcaccccccgg	actccacatc	1080									
gactacggct	acgcctgaa	cagcctgcgc	accggggccg	acgcccgaact	gctgcggatc	1140									
aagccgcca	ccatgcggcc	caccgcgcac	ccgcaggctcg	cggtgcaggt	cgatctccctc	1200									
ggcgcacgtgt	acctgtaccg	cgaggccggc	ttccccgacc	tggacggcgc	gaccgcgtac	1260									
atcgcggggc	gcgtgaccccc	cgacacctcc	ctcaccgagg	tcgtcaggg	cttcgtcgag	1320									
cgcggcggcg	aggtggcgcc	cgtgcacggc	gacgagact	tcatggacgg	cttcgtatcag	1380									
gtcgtcaccc	cccgccctgaa	ccagctggag	cgcgacgcgc	cggacggctg	ggaggaggcc	1440									
cgccgcttcc	tgcgctgaa					1458									

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 <211> 485
 <212> PRT
 <213> Streptomyces venezuelae

<400> 10															
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								20		25			30		
Leu	Ala	Ala	Gly	Gly	Leu	Val	Pro	Pro	Asp	Glu	Ala	Gly	Thr	Thr	Ala
								35		40			45		
Arg	His	Leu	Val	Arg	Leu	Ala	Val	Arg	Tyr	Gly	Asn	Ser	Pro	Phe	Thr
								50		55			60		
Pro	Leu	Glu	Glu	Ala	Arg	His	Asp	Leu	Gly	Val	Asp	Arg	Asp	Ala	Phe
								65		70			75		80
Arg	Arg	Leu	Leu	Ala	Leu	Phe	Gly	Gln	Val	Pro	Glu	Leu	Arg	Thr	Ala
								85		90			95		
Val	Glu	Thr	Gly	Pro	Ala	Gly	Ala	Tyr	Trp	Lys	Asn	Thr	Leu	Leu	Pro
								100		105			110		

Leu Glu Gln Arg Gly Val Phe Asp Ala Ala Leu Ala Arg Lys Pro Val
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 Phe Pro Tyr Ser Val Gly Leu Tyr Pro Gly Pro Thr Cys Met Phe Arg
 130 135 140
 Cys His Phe Cys Val Arg Val Thr Gly Ala Arg Tyr Asp Pro Ser Ala
 145 150 155 160
 Leu Asp Ala Gly Asn Ala Met Phe Arg Ser Val Ile Asp Glu Ile Pro
 165 170 175
 Ala Gly Asn Pro Ser Ala Met Tyr Phe Ser Gly Gly Leu Glu Pro Leu
 180 185 190
 Thr Asn Pro Gly Leu Gly Ser Leu Ala Ala His Ala Thr Asp His Gly
 195 200 205
 Leu Arg Pro Thr Val Tyr Thr Asn Ser Phe Ala Leu Thr Glu Arg Thr
 210 215 220
 Leu Glu Arg Gln Pro Gly Leu Trp Gly Leu His Ala Ile Arg Thr Ser
 225 230 235 240
 Leu Tyr Gly Leu Asn Asp Glu Glu Tyr Glu Gln Thr Thr Gly Lys Lys
 245 250 255
 Ala Ala Phe Arg Arg Val Arg Glu Asn Leu Arg Arg Phe Gln Gln Leu
 260 265 270
 Arg Ala Glu Arg Glu Ser Pro Ile Asn Leu Gly Phe Ala Tyr Ile Val
 275 280 285
 Leu Pro Gly Arg Ala Ser Arg Leu Leu Asp Leu Val Asp Phe Ile Ala
 290 295 300
 Asp Leu Asn Asp Ala Gly Gln Gly Arg Thr Ile Asp Phe Val Asn Ile
 305 310 315 320
 Arg Glu Asp Tyr Ser Gly Arg Asp Asp Gly Lys Leu Pro Gln Glu Glu
 325 330 335
 Arg Ala Glu Leu Gln Glu Ala Leu Asn Ala Phe Glu Glu Arg Val Arg
 340 345 350
 Glu Arg Thr Pro Gly Leu His Ile Asp Tyr Gly Tyr Ala Leu Asn Ser
 355 360 365
 Leu Arg Thr Gly Ala Asp Ala Glu Leu Leu Arg Ile Lys Pro Ala Thr
 370 375 380
 Met Arg Pro Thr Ala His Pro Gln Val Ala Val Gln Val Asp Leu Leu
 385 390 395 400
 Gly Asp Val Tyr Leu Tyr Arg Glu Ala Gly Phe Pro Asp Leu Asp Gly
 405 410 415
 Ala Thr Arg Tyr Ile Ala Gly Arg Val Thr Pro Asp Thr Ser Leu Thr
 420 425 430
 Glu Val Val Arg Asp Phe Val Glu Arg Gly Gly Glu Val Ala Ala Val
 435 440 445
 Asp Gly Asp Glu Tyr Phe Met Asp Gly Phe Asp Gln Val Val Thr Ala
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 Arg Leu Asn Gln Leu Glu Arg Asp Ala Ala Asp Gly Trp Glu Glu Ala
 465 470 475 480
 Arg Gly Phe Leu Arg
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<210> 11
 <211> 879
 <212> DNA
 <213> Streptomyces venezuelae

<400> 11

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ctcatgctcg	gcggatttcg	cgagattcaa	atcatctcg	cccccccagca	catcgaaactc	180
ttccagtccgc	ttctcgaaaa	cggcaggcac	ctggaaatag	aactcgacta	tgcggtccag	240
aaagagcccg	caggaatcgc	ggacgcacctt	ctcgctggag	ccgagcacat	cgggcagcagac	300
acctgcgcc	tgatcctggg	cgacaacatc	ttccacgggc	ccggcctcta	cacgctcctg	360
cgggacagca	tgcgcgcct	cgacggctgc	gtgctttcg	gctacccggt	caaggacccc	420

gagcggtacg	gcgtcgccga	ggtggacgcg	acggggccggc	tgaccgacct	cgtcgagaag	480
cccgtcaagc	cgcgtccaa	cctcgccgtc	accggcctct	acctctacga	caacgcacgtc	540
gtcgacatcg	ccaagaacat	ccggccctcg	ccgcgcggcg	agctggagat	caccgacgtc	600
aaccgcgtct	acctggagcg	gggcggggcc	gaactcgtca	acctgggccg	cggcttcgccc	660
tggctggaca	ccggcaccca	cgactcgctc	ctgcggggccg	cccagtagct	ccaggtcctg	720
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atcgacgccc	aggcctgtca	cggcctggga	gaaggcctct	ccgcacccga	gtacggcagc	840
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 <211> 292
 <212> PRT
 <213> Streptomyces venezuelae

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Met Ile Tyr Tyr Pro Leu Ser Val Leu Met Leu Gly Gly Ile Arg Glu						
35	40		45			
Ile Gln Ile Ile Ser Thr Pro Gln His Ile Glu Leu Phe Gln Ser Leu						
50	55		60			
Leu Gly Asn Gly Arg His Leu Gly Ile Glu Leu Asp Tyr Ala Val Gln						
65	70		75		80	
Lys Glu Pro Ala Gly Ile Ala Asp Ala Leu Leu Val Gly Ala Glu His						
85	90		95			
Ile Gly Asp Asp Thr Cys Ala Leu Ile Leu Gly Asp Asn Ile Phe His						
100	105		110			
Gly Pro Gly Leu Tyr Thr Leu Leu Arg Asp Ser Ile Ala Arg Leu Asp						
115	120		125			
Gly Cys Val Leu Phe Gly Tyr Pro Val Lys Asp Pro Glu Arg Tyr Gly						
130	135		140			
Val Ala Glu Val Asp Ala Thr Gly Arg Leu Thr Asp Leu Val Glu Lys						
145	150		155		160	
Pro Val Lys Pro Arg Ser Asn Leu Ala Val Thr Gly Leu Tyr Leu Tyr						
165	170		175			
Asp Asn Asp Val Val Asp Ile Ala Lys Asn Ile Arg Pro Ser Pro Arg						
180	185		190			
Gly Glu Leu Glu Ile Thr Asp Val Asn Arg Val Tyr Leu Glu Arg Gly						
195	200		205			
Arg Ala Glu Leu Val Asn Leu Gly Arg Gly Phe Ala Trp Leu Asp Thr						
210	215		220			
Gly Thr His Asp Ser Leu Leu Arg Ala Ala Gln Tyr Val Gln Val Leu						
225	230		235		240	
Glu Glu Arg Gln Gly Val Trp Ile Ala Gly Leu Glu Glu Ile Ala Phe						
245	250		255			
Arg Met Gly Phe Ile Asp Ala Glu Ala Cys His Gly Leu Gly Glu Gly						
260	265		270			
Leu Ser Arg Thr Glu Tyr Gly Ser Tyr Leu Met Glu Ile Ala Gly Arg						
275	280		285			
Glu Gly Ala Pro						
290						

<210> 13
 <211> 1014
 <212> DNA
 <213> Streptomyces venezuelae

<400> 13						
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tacgcgggca	accgcgccaa	cctcgccccg	gtggacgcgg	acccgcgact	gchgcttcgtc	180
cacggcgaca	tccgcgacgc	cggcctcctc	gcccgggaac	tgcgcggcgt	ggacgcacatc	240
gtccacttcg	cggccgagag	ccacgtggac	cgctccatcg	cgggcgcgtc	cgtgttcacc	300
gagaccaacg	tgcagggcac	gcagacgctg	ctccagtgcg	ccgtcgaacgc	cggcgtcggc	360
cgggtcgtgc	acgtctccac	cgacgagggt	tacgggtcga	tcgactccgg	ctccctggacc	420
gagagcagcc	cgctggagcc	caactcgccc	tacgcggcgt	ccaaggccgg	ctccgacctc	480
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aactacgggc	cgtaccagca	ccccgagaag	ctcatcccc	tcttcgtgac	gaacctcctc	600
gacggcgaaa	cgctcccgct	gtacggcgac	ggcgcgaacg	tccgcgagtg	ggtgtcacacc	660
gacgaccact	gccggggcat	cgcgctcgct	ctcgccggcg	gccggggccgg	cgagatctac	720
cacatcgccg	gcccgcgtga	gctgaccaac	cgcgaactca	ccggcattct	cctggactcg	780
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tactccctcg	acggcgccga	gatcgagcgc	gagctcggt	accgcccga	ggtctccttc	900
gcggacggcc	tcgcgcggac	cgtccgctgg	tacccggaga	accgcggctg	gtgggagccg	960
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<210> 14

<211> 337

<212> PRT

<213> Streptomyces venezuelae

<400> 14

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Val	Arg	Gln	Leu	Leu	Ala	Gly	Ala	Tyr	Pro	Asp	Val	Pro	Ala	Asp	Glu
											20				30
Val	Ile	Val	Leu	Asp	Ser	Leu	Thr	Tyr	Ala	Gly	Asn	Arg	Ala	Asn	Leu
											35				45
Ala	Pro	Val	Asp	Ala	Asp	Pro	Arg	Leu	Arg	Phe	Val	His	Gly	Asp	Ile
											50				60
Arg	Asp	Ala	Gly	Leu	Leu	Ala	Arg	Glu	Leu	Arg	Gly	Val	Asp	Ala	Ile
											65				80
Val	His	Phe	Ala	Ala	Glu	Ser	His	Val	Asp	Arg	Ser	Ile	Ala	Gly	Ala
											85				95
Ser	Val	Phe	Thr	Glu	Thr	Asn	Val	Gln	Gly	Thr	Gln	Thr	Leu	Leu	Gln
											100				110
Cys	Ala	Val	Asp	Ala	Gly	Val	Gly	Arg	Val	Val	His	Val	Ser	Thr	Asp
											115				125
Glu	Val	Tyr	Gly	Ser	Ile	Asp	Ser	Gly	Ser	Trp	Thr	Glu	Ser	Ser	Pro
											130				140
Leu	Glu	Pro	Asn	Ser	Pro	Tyr	Ala	Ala	Ser	Lys	Ala	Gly	Ser	Asp	Leu
											145				160
Val	Ala	Arg	Ala	Tyr	His	Arg	Thr	Tyr	Gly	Leu	Asp	Val	Arg	Ile	Thr
											165				175
Arg	Cys	Cys	Asn	Asn	Tyr	Gly	Pro	Tyr	Gln	His	Pro	Glu	Lys	Leu	Ile
											180				190
Pro	Leu	Phe	Val	Thr	Asn	Leu	Leu	Asp	Gly	Gly	Thr	Leu	Pro	Leu	Tyr
											195				205
Gly	Asp	Gly	Ala	Asn	Val	Arg	Glu	Trp	Val	His	Thr	Asp	Asp	His	Cys
											210				220
Arg	Gly	Ile	Ala	Leu	Val	Leu	Ala	Gly	Gly	Arg	Ala	Gly	Glu	Ile	Tyr
											225				240
His	Ile	Gly	Gly	Gly	Leu	Glu	Leu	Thr	Asn	Arg	Glu	Leu	Thr	Gly	Ile
											245				255
Leu	Leu	Asp	Ser	Leu	Gly	Ala	Asp	Trp	Ser	Ser	Val	Arg	Lys	Val	Ala
											260				270
Asp	Arg	Lys	Gly	His	Asp	Leu	Arg	Tyr	Ser	Leu	Asp	Gly	Gly	Glu	Ile
											275				285
Glu	Arg	Glu	Leu	Gly	Tyr	Arg	Pro	Gln	Val	Ser	Phe	Ala	Asp	Gly	Leu
											290				300
Ala	Arg	Thr	Val	Arg	Trp	Tyr	Arg	Glu	Asn	Arg	Gly	Trp	Trp	Glu	Pro
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Leu Lys Ala Thr Ala Pro Gln Leu Pro Ala Thr Ala Val Glu Val Ser
 325 330 335
 Ala

<210> 15
 <211> 1140
 <212> DNA
 <213> Streptomyces venezuelae

<400> 15

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ctcgaccccg	aactcgaagg	attcgaggcg	gagttcgccg	cgtactgcga	180
gccgtcgccg	tgaacagcgg	gatggacgcc	ctccagctcg	ccctccgcgg	240
ggacccgggg	acgaggtat	cgtcccctcg	cacacgtaca	tcgcccagctg	300
tccgcccacccg	gcgcgaccccc	cgtgcccgtc	gagccgcacg	aggaccaccc	360
ccgctgctcg	tcgagaaggc	gatcaccccc	cgcacccggg	cgctcctccc	420
tacgggcacc	ccgcccacat	ggacgcctc	cgcgagctcg	cggacccggca	480
atcgctcgagg	acgcccgcga	ggcccacggc	gcccgcgtacc	ggggccggcg	540
gggtcgctgg	tggccgcgtt	cagcttctac	ccgggcaaga	acctcggtcg	600
ggcggcgccg	tcgtcaccgg	cgaccccgag	ctcgccgaac	ggctccggat	660
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tcggcgctgg	ccgcccggat	cctctccggg	ctcgccggac	cctggacgag	840
gtgaccgcgc	ccgacaccga	cccggtctgg	caccccttca	tgcccggcat	900
gacgagctgc	gcagccaccc	cgacgcccgc	ccgtgcgcac	cgccctgcgc	960
cccggtcacc	tctcgcccgc	ctacgcgggc	ggcatcgaca	ccctcacgca	1020
gcccggagct	tcgcgcggca	ggtcctcagc	ctggcgatcg	ctacccggta	1080
caggcgtgc	gggtgatcga	cgccgtgcgc	gaatggccgc	ggagcgcccg	1140

<210> 16
 <211> 379
 <212> PRT
 <213> Streptomyces venezuelae

<400> 16

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Ala	Ala	Tyr	Glu	Glu	Leu	Arg	Ala	Glu	Thr	Asp	Ala	Ala	Ile	Ala	Arg
					20			25			30				
Val	Leu	Asp	Ser	Gly	Arg	Tyr	Leu	Leu	Gly	Pro	Glu	Leu	Glu	Gly	Phe
					35			40			45				
Glu	Ala	Glu	Phe	Ala	Ala	Tyr	Cys	Glu	Thr	Asp	His	Ala	Val	Gly	Val
					50			55			60				
Asn	Ser	Gly	Met	Asp	Ala	Leu	Gln	Leu	Ala	Leu	Arg	Gly	Leu	Gly	Ile
					65			70			75			80	
Gly	Pro	Gly	Asp	Glu	Val	Ile	Val	Pro	Ser	His	Thr	Tyr	Ile	Ala	Ser
					85			90			95				
Trp	Leu	Ala	Val	Ser	Ala	Thr	Gly	Ala	Thr	Pro	Val	Pro	Val	Glu	Pro
					100			105			110				
His	Glu	Asp	His	Pro	Thr	Leu	Asp	Pro	Leu	Leu	Val	Glu	Lys	Ala	Ile
					115			120			125				
Thr	Pro	Arg	Thr	Arg	Ala	Leu	Leu	Pro	Val	His	Leu	Tyr	Gly	His	Pro
					130			135			140				
Ala	Asp	Met	Asp	Ala	Leu	Arg	Glu	Leu	Ala	Asp	Arg	His	Gly	Leu	His
					145			150			155			160	
Ile	Val	Glu	Asp	Ala	Ala	Gln	Ala	His	Gly	Ala	Arg	Tyr	Arg	Gly	Arg
								165			170			175	
Arg	Ile	Gly	Ala	Gly	Ser	Ser	Val	Ala	Ala	Phe	Ser	Phe	Tyr	Pro	Gly
					180			185			190				

Lys	Asn	Leu	Gly	Cys	Phe	Gly	Asp	Gly	Gly	Ala	Val	Val	Thr	Gly	Asp	
							195		200				205			
Pro	Glu	Leu	Ala	Glu	Arg	Leu	Arg	Met	Leu	Arg	Asn	Tyr	Gly	Ser	Arg	
							210		215			220				
Gln	Lys	Tyr	Ser	His		Glu	Thr	Lys	Gly	Thr	Asn	Ser	Arg	Leu	Asp	Glu
							225		230			235			240	
Met	Gln	Ala	Ala	Val	Leu	Arg	Ile	Arg	Leu	Ala	His	Leu	Asp	Ser	Trp	
							245		250			255				
Asn	Gly	Arg	Arg	Ser	Ala	Leu	Ala	Ala	Glu	Tyr	Leu	Ser	Gly	Leu	Ala	
							260		265			270				
Gly	Leu	Pro	Gly	Ile	Gly	Leu	Pro	Val	Thr	Ala	Pro	Asp	Thr	Asp	Pro	
							275		280			285				
Val	Trp	His	Leu	Phe	Thr	Val	Arg	Thr	Glu	Arg	Arg	Asp	Glu	Leu	Arg	
							290		295			300				
Ser	His	Leu	Asp	Ala	Arg	Gly	Ile	Asp	Thr	Leu	Thr	His	Tyr	Pro	Val	
							305		310			315			320	
Pro	Val	His	Leu	Ser	Pro	Ala	Tyr	Ala	Gly	Glu	Ala	Pro	Pro	Glu	Gly	
							325		330			335				
Ser	Leu	Pro	Arg	Ala	Glu	Ser	Phe	Ala	Arg	Gln	Val	Leu	Ser	Leu	Pro	
							340		345			350				
Ile	Gly	Pro	His	Leu	Glu	Arg	Pro	Gln	Ala	Leu	Arg	Val	Ile	Asp	Ala	
							355		360			365				
Val	Arg	Glu	Trp	Ala	Glu	Arg	Val	Asp	Gln	Ala						
							370		375							

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<210> 17
<211> 714
<212> DNA
<213> Streptomyces venezuelae
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<400> 17

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tcgctctgg	acgtggctg	cggtacgggc	acgcattctgg	agcacttcac	caaggagttc	180
ggcgacaccg	ccggcctgga	gctgtccgag	gacatgctca	cccacgcccc	caagcggctg	240
cccgacgcca	cgctccacca	gggcgacatg	cgggacttcc	ggctcggccg	gaagttctcc	300
gccgtggtca	gcatgttcag	ctccgtcggc	tacctgaaga	cgaccggagga	actcggcgcg	360
gccgtcgct	cgttcgcgg	gcacctggag	cccggtggcg	tcgtcgtcgt	cgagccgtgg	420
tggttcccg	agaccttcgc	cgacggctgg	gtcagcggcc	acgtcgtccg	ccgtgacgggg	480
cgcacccgtgg	cccggtgtctc	gcactcggtg	cgggagggga	acgcgacgcg	catggaggtc	540
cacttcaccc	tggccgaccc	gggcaagggc	gtgcggcact	tctccgacgt	ccatctcatc	600
accctgttcc	accaggccga	gtacgaggcc	gcttacgg	ccggccggct	gcgctcgag	660
tacctggagg	gccccccgtc	ggggccgtggc	ctttcgtcg	gcgtccccgc	ctga	714

<210> 18
<211> 237
<212> PRT
<213> Streptomyces venezuelae

<400> 18

Met	Tyr	Glu	Val	Asp	His	Ala	Asp	Val	Tyr	Asp	Leu	Phe	Tyr	Leu	Gly
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Arg	Gly	Lys	Asp	Tyr	Ala	Ala	Glu	Ala	Ser	Asp	Ile	Ala	Asp	Leu	Val
				20				25					30		
Arg	Ser	Arg	Thr	Pro	Glu	Ala	Ser	Ser	Leu	Leu	Asp	Val	Ala	Cys	Gly
					35			40					45		
Thr	Gly	Thr	His	Leu	Glu	His	Phe	Thr	Lys	Glu	Phe	Gly	Asp	Thr	Ala
					50			55			60				
Gly	Leu	Glu	Leu	Ser	Glu	Asp	Met	Leu	Thr	His	Ala	Arg	Lys	Arg	Leu
					65			70		75				80	
Pro	Asp	Ala	Thr	Leu	His	Gln	Gly	Asp	Met	Arg	Asp	Phe	Arg	Leu	Gly
					85				90					95	

Arg Lys Phe Ser Ala Val Val Ser Met Phe Ser Ser Val Gly Tyr Leu
 100 105 110
 Lys Thr Thr Glu Glu Leu Gly Ala Ala Val Ala Ser Phe Ala Glu His
 115 120 125
 Leu Glu Pro Gly Gly Val Val Val Val Glu Pro Trp Trp Phe Pro Glu
 130 135 140
 Thr Phe Ala Asp Gly Trp Val Ser Ala Asp Val Val Arg Arg Asp Gly
 145 150 155 160
 Arg Thr Val Ala Arg Val Ser His Ser Val Arg Glu Gly Asn Ala Thr
 165 170 175
 Arg Met Glu Val His Phe Thr Val Ala Asp Pro Gly Lys Gly Val Arg
 180 185 190
 His Phe Ser Asp Val His Leu Ile Thr Leu Phe His Gln Ala Glu Tyr
 195 200 205
 Glu Ala Ala Phe Thr Ala Ala Gly Leu Arg Val Glu Tyr Leu Glu Gly
 210 215 220
 Gly Pro Ser Gly Arg Gly Leu Phe Val Gly Val Pro Ala
 225 230 235

<210> 19
 <211> 1281
 <212> DNA
 <213> Streptomyces venezuelae

<400> 19

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gcctgggcgc	tgctcqccgc	cgggcacgag	gtgcgggtcg	ccagccagcc	cgcgctcacg	120
gacaccatca	ccgggtccgg	gctgcccgcg	gtgccggtcg	gcaccgacca	cctcatccac	180
gagtaccggg	tgcggtatggc	gggcgagccg	cgcgggaacc	atccggcgat	cgcccttcgac	240
gaggcccgct	ccgagccgct	ggactgggac	cacgcctcg	gatcgcaggc	gatcctcgcc	300
ccgtacttcc	atctgctcgc	caacaacgac	tcgatggtcg	acgacctcg	cgacttcgcc	360
cggtcctggc	agccggacct	ggtgctgtgg	gagccgacga	cctacgcggg	cgccgtcgcc	420
gcccaggta	ccgggtccgc	gcacgcccgg	gtcctgtggg	ggcccgcacgt	gatgggcagc	480
gcccggcgca	agttcgtcgc	gctgcgggac	cggcagccgc	ccgagcaccg	cgaggacccc	540
accgcggagt	ggctgacgtg	gacgctcgac	cggtaacggcg	cctccttcga	agaggagctg	600
ctcaccggcc	agttcacgt	cgaccgcacc	ccggcgagcc	tgcccttcga	cacgggcctg	660
ccgaccgtcg	ggatgcgtta	tgttcgtac	aacggcacgt	cggtcgtgcc	ggactggctg	720
agttagccgc	ccgcgcggcc	ccgggtctgc	ctgaccctcg	gcgttccgc	gcgtgaggtc	780
ctcggcggcg	acggcgtctc	gcagggcgac	atccctggagg	cgctcggcga	cctcgacatc	840
gagctcgtcg	ccacgctcga	cgcgagtcag	cgcgcccaga	tccgcaacta	cccgaaagcac	900
acccgggttca	cggaacttcgt	gccgatgcac	gcccgtctgc	cgagctgctc	ggcgatcatc	960
caccacggcg	gggcggggcac	ctacgcgacc	gccgtatca	acgcggtgcc	gcaggtcatg	1020
ctcgccgagc	tgtgggacgc	gccggtaag	gcccggggcg	tcgcccagca	ggggggcgggg	1080
ttcttcctgc	cgccggccga	gctcacgccc	caggccgtgc	gggacgcccgt	cggtccgcata	1140
ctcgacgacc	cctcggtcgc	caccgcgcg	caccggctgc	gctggaggagac	cttcggcgac	1200
cccaccccg	ccgggatcgt	ccccgagctg	gagcggctcg	ccgcgcagca	ccgcccggccg	1260
ccggccgacg	cccgccactg	a				1281

<210> 20

<211> 426

<212> PRT

<213> Streptomyces venezuelae

<400> 20

Met Arg Val Leu Leu Thr Ser Phe Ala His His Thr His Tyr Tyr Gly						
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Leu Val Pro Leu Ala Trp Ala Leu Leu Ala Ala Gly His Glu Val Arg						
20	25	30				
Val Ala Ser Gln Pro Ala Leu Thr Asp Thr Ile Thr Gly Ser Gly Leu						
35	40	45				
Ala Ala Val Pro Val Gly Thr Asp His Leu Ile His Glu Tyr Arg Val						
50	55	60				

Arg Met Ala Gly Glu Pro Arg Pro Asn His Pro Ala Ile Ala Phe Asp
 65 70 75 80
 Glu Ala Arg Pro Glu Pro Leu Asp Trp Asp His Ala Leu Gly Ile Glu
 85 90 95
 Ala Ile Leu Ala Pro Tyr Phe His Leu Leu Ala Asn Asn Asp Ser Met
 100 105 110
 Val Asp Asp Leu Val Asp Phe Ala Arg Ser Trp Gln Pro Asp Leu Val
 115 120 125
 Leu Trp Glu Pro Thr Thr Tyr Ala Gly Ala Val Ala Ala Gln Val Thr
 130 135 140
 Gly Ala Ala His Ala Arg Val Leu Trp Gly Pro Asp Val Met Gly Ser
 145 150 155 160
 Ala Arg Arg Lys Phe Val Ala Leu Arg Asp Arg Gln Pro Pro Glu His
 165 170 175
 Arg Glu Asp Pro Thr Ala Glu Trp Leu Thr Trp Thr Leu Asp Arg Tyr
 180 185 190
 Gly Ala Ser Phe Glu Glu Glu Leu Leu Thr Gly Gln Phe Thr Ile Asp
 195 200 205
 Pro Thr Pro Pro Ser Leu Arg Leu Asp Thr Gly Leu Pro Thr Val Gly
 210 215 220
 Met Arg Tyr Val Pro Tyr Asn Gly Thr Ser Val Val Pro Asp Trp Leu
 225 230 235 240
 Ser Glu Pro Pro Ala Arg Pro Arg Val Cys Leu Thr Leu Gly Val Ser
 245 250 255
 Ala Arg Glu Val Leu Gly Gly Asp Gly Val Ser Gln Gly Asp Ile Leu
 260 265 270
 Glu Ala Leu Ala Asp Leu Asp Ile Glu Leu Val Ala Thr Leu Asp Ala
 275 280 285
 Ser Gln Arg Ala Glu Ile Arg Asn Tyr Pro Lys His Thr Arg Phe Thr
 290 295 300
 Asp Phe Val Pro Met His Ala Leu Leu Pro Ser Cys Ser Ala Ile Ile
 305 310 315 320
 His His Gly Gly Ala Gly Thr Tyr Ala Thr Ala Val Ile Asn Ala Val
 325 330 335
 Pro Gln Val Met Leu Ala Glu Leu Trp Asp Ala Pro Val Lys Ala Arg
 340 345 350
 Ala Val Ala Glu Gln Gly Ala Gly Phe Phe Leu Pro Pro Ala Glu Leu
 355 360 365
 Thr Pro Gln Ala Val Arg Asp Ala Val Val Arg Ile Leu Asp Asp Pro
 370 375 380
 Ser Val Ala Thr Ala Ala His Arg Leu Arg Glu Glu Thr Phe Gly Asp
 385 390 395 400
 Pro Thr Pro Ala Gly Ile Val Pro Glu Leu Glu Arg Leu Ala Ala Gln
 405 410 415
 His Arg Arg Pro Pro Ala Asp Ala Arg His
 420 425

<210> 21
 <211> 1209
 <212> DNA
 <213> Streptomyces venezuelae

<400> 21

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gccgcgaacg gcgaccggta cgcacccgtg ctgcgcggcc aggcggacga cccgtatccc	180
gcgtacgagc gggtcgtgc ccgcggcgcg ctctcattca gcccgcacggg cagctgggtc	240
accgcgcatac acgcacctggc ggcgagcatc ctctgctcga cggacttcgg ggtctccggc	300
gccgacggcg tcccggtgcc gcagcagggtc ctctcgatcg gggagggtc tccgctggag	360
cgcgagcagg tgctgccccgc ggccgggtgac gtgcgggagg gcgggcagcg tgccgtggtc	420
gaggggatcc accgggagac gctggagggtt ctcgcgcgg acccgatcgcc gtcgtacgccc	480
ttcgagctgc tggcggttt cgtccgcgg gcggatcgcc cgctgcgcg cgccgtctg	540

gggtttcccg	cggacccggcg	cgcggacttc	cgccgatctgc	tggagcggct	ccggccgctg	600
tccgacagcc	tgctggcccc	gcagtcctg	cggacggta	gggcggcgg	ccgcgcgt	660
gccgagctca	cggcgctgt	cgccgattcg	gacgactccc	ccggggccct	gctgtcg	720
ctcggggtca	ccgcagccgt	ccagtcacc	gggaacgcgg	tgctcg	cctcg	780
cccgagcagt	ggcgggagct	gtgcgaccgg	cccggtctcg	ccggccgcgc	ggtggaggag	840
accctccgct	acgacccgc	ggtgtcagctc	gacgcccggg	tggtccgcgg	ggagacggag	900
ctggcgggccc	ggcggctgccc	ggccggggcg	catgtcg	tcctgaccgc	cgcgacccgc	960
cgggacccgg	aggcttca	ggacccggag	cgcttcgacc	tgcgcgcccc	cgacgcgc	1020
gcgcaccccg	cgtgcaccc	cgccggtccg	tacggccccc	tggcgtccct	ggtccgc	1080
caggcgagg	tgcgcgtcg	gaccctggcc	gggcgtttcc	ccgggctgcg	gcaggcg	1140
gacgtgtcc	gccccccgc	cgcgcctgtc	ggccgcgggc	cgctgagcgt	cccggtc	1200
agctccgt						1209

<210> 22
<211> 402
<212> PRT
<213> Streptomyces venezuelae

<400> 22
 Met Thr Asp Asp Leu Thr Gly Ala Leu Thr Gln Pro Pro Leu Gly Arg
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 Thr Val Arg Ala Val Ala Asp Arg Glu Leu Gly Thr His Leu Leu Glu
 20 25 30
 Thr Arg Gly Ile His Trp Ile His Ala Ala Asn Gly Asp Pro Tyr Ala
 35 40 45
 Thr Val Leu Arg Gly Gln Ala Asp Asp Pro Tyr Pro Ala Tyr Glu Arg
 50 55 60
 Val Arg Ala Arg Gly Ala Leu Ser Phe Ser Pro Thr Gly Ser Trp Val
 65 70 75 80
 Thr Ala Asp His Ala Leu Ala Ser Ile Leu Cys Ser Thr Asp Phe
 85 90 95
 Gly Val Ser Gly Ala Asp Gly Val Pro Val Pro Gln Gln Val Leu Ser
 100 105 110
 Tyr Gly Glu Gly Cys Pro Leu Glu Arg Glu Gln Val Leu Pro Ala Ala
 115 120 125
 Gly Asp Val Pro Glu Gly Gly Gln Arg Ala Val Val Glu Gly Ile His
 130 135 140
 Arg Glu Thr Leu Glu Gly Leu Ala Pro Asp Pro Ser Ala Ser Tyr Ala
 145 150 155 160
 Phe Glu Leu Leu Gly Gly Phe Val Arg Pro Ala Val Thr Ala Ala Ala
 165 170 175
 Ala Ala Val Leu Gly Val Pro Ala Asp Arg Arg Ala Asp Phe Ala Asp
 180 185 190
 Leu Leu Glu Arg Leu Arg Pro Leu Ser Asp Ser Leu Leu Ala Pro Gln
 195 200 205
 Ser Leu Arg Thr Val Arg Ala Ala Asp Gly Ala Leu Ala Glu Leu Thr
 210 215 220
 Ala Leu Leu Ala Asp Ser Asp Asp Ser Pro Gly Ala Leu Leu Ser Ala
 225 230 235 240
 Leu Gly Val Thr Ala Ala Val Gln Leu Thr Gly Asn Ala Val Leu Ala
 245 250 255
 Leu Leu Ala His Pro Glu Gln Trp Arg Glu Leu Cys Asp Arg Pro Gly
 260 265 270
 Leu Ala Ala Ala Ala Val Glu Glu Thr Leu Arg Tyr Asp Pro Pro Val
 275 280 285
 Gln Leu Asp Ala Arg Val Val Arg Gly Glu Thr Glu Leu Ala Gly Arg
 290 295 300
 Arg Leu Pro Ala Gly Ala His Val Val Val Leu Thr Ala Ala Thr Gly
 305 310 315 320
 Arg Asp Pro Glu Val Phe Thr Asp Pro Glu Arg Phe Asp Leu Ala Arg
 325 330 335

Pro Asp Ala Ala Ala His Leu Ala Leu His Pro Ala Gly Pro Tyr Gly
 340 345 350
 Pro Val Ala Ser Leu Val Arg Leu Gln Ala Glu Val Ala Leu Arg Thr
 355 360 365
 Leu Ala Gly Arg Phe Pro Gly Leu Arg Gln Ala Gly Asp Val Leu Arg
 370 375 380
 Pro Arg Arg Ala Pro Val Gly Arg Gly Pro Leu Ser Val Pro Val Ser
 385 390 395 400
 Ser Ser

<210> 23
 <211> 2430
 <212> DNA
 <213> Streptomyces venezuelae

<400> 23

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gcccggaca	cggccaatgt	tcagtacacg	agccgggcgg	cggagctcg	cgccccatgt	180
acgctcgacg	agaagatcg	cttcgtccac	tggcgctgg	accccggaccg	gcagaacgtc	240
ggctaccttc	ccggcgtgcc	gctctgggc	atcccgagc	tgcgtgccgc	cgacggcccg	300
aacggcatcc	gcctgggtgg	gcagaccggc	accgcgtgc	ccgcgcgggt	cgccctggcc	360
agcaccttcg	acgacaccat	ggccgacacgc	tacggcaagg	tcatggcccg	cgacggtcgc	420
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ggccggaaact	acgagacctt	cagcgaggac	cccctggct	cctcgccac	cgcggtcgcc	540
cagatcaagg	gcatccaggg	tgcgggtctg	atgaccacgg	ccaagcactt	cgcgccaaac	600
aaccaggaga	acaaccgctt	ctccgtgaac	gccaatgtcg	acgagcagac	gctccgcgag	660
atcgagttcc	cggcgttcga	ggcgtcctcc	aaggccggc	cggcctcctt	catgtgtgcc	720
tacaacggcc	tcaacggaa	gccgtcctgc	ggcaacgacg	agctcctcaa	caacgtctg	780
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gacgccatca	ccaaggggct	cgaccaggag	atgggcgtcg	agctcccccgg	cgacgtcccg	900
aaggggcgagc	cctcgccgcc	ggccaaggttc	ttccggcgagg	cgctgaagac	ggccgtctcg	960
aacggcacgg	tccccgaggc	ggccgtgacg	cggtcgccgg	agcggatcg	cgccagatgt	1020
gagaagttcg	gtctgtctt	cgccactccg	gcgcccggc	ccgagcgcga	caaggcggt	1080
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ccactcgaca	ccatcaaggc	ccgcgcgggt	gcgggtgcga	cggtgacgta	cgagacgggt	1320
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caccagctcg	agccgggca	ggcggggggc	ctgtacgacg	gcacgctgac	cgtccccgccc	1440
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agccacacca	tcgaggccgg	tcaggtctac	ggcaagggtga	gcagcccgct	cctcaagctg	1560
accaaggcga	cgcacaagct	cacgatctcg	ggttcgcga	tgagtgcac	cccgctctcc	1620
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gccaacccga	acacgatcg	ggtccctcaac	accgggtcg	cggtgctgat	gccgtggctg	1860
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gcccggctgc	tctacggta	cgtcaacccg	agcggcaagc	tcacgcagag	cttcccggcc	1980
gcccggaaacc	agcacgcgg	cgccggcgac	ccgacaagct	acccgggcgt	cgacaaccag	2040
cagacgtacc	gcgaggggcat	ccacgtcg	taccgctgg	tcgacaagga	gaacgtcaag	2100
ccgctgttcc	cggtcgccg	cgccctgtcg	tacacctcg	tcacgcagag	cgcccccggacc	2160
gtcggtcgta	cgtccacggg	tggtctgaag	gtcacggta	cggtccgc	cagcgggaag	2220
cgccggccggc	aggaggtcg	ccaggcgat	ctcggtgcca	gcccgaacgt	gacggctccg	2280
caggcgaaga	agaagctcg	gggctacacg	aagggtctcg	tcgcccgggg	cgaggcgaag	2340
acgggtacgg	tgaacgtcg	ccggcgatcg	ctgcagacccg	gttcgtcctc	cgccgacactg	2400
cggggcagcg	ccacggtaa	cgtctggta				2430

<210> 24
 <211> 809
 <212> PRT
 <213> Streptomyces venezuelae

<400> 24
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 Thr Val Ala Ala Ala Ala Pro Gly Ala Ala Asp Thr Ala Asn Val Gln
 35 40 45
 Tyr Thr Ser Arg Ala Ala Glu Leu Val Ala Gln Met Thr Leu Asp Glu
 50 55 60
 Lys Ile Ser Phe Val His Trp Ala Leu Asp Pro Asp Arg Gln Asn Val
 65 70 75 80
 Gly Tyr Leu Pro Gly Val Pro Arg Leu Gly Ile Pro Glu Leu Arg Ala
 85 90 95
 Ala Asp Gly Pro Asn Gly Ile Arg Leu Val Gly Gln Thr Ala Thr Ala
 100 105 110
 Leu Pro Ala Pro Val Ala Leu Ala Ser Thr Phe Asp Asp Thr Met Ala
 115 120 125
 Asp Ser Tyr Gly Lys Val Met Gly Arg Asp Gly Arg Ala Leu Asn Gln
 130 135 140
 Asp Met Val Leu Gly Pro Met Met Asn Asn Ile Arg Val Pro His Gly
 145 150 155 160
 Gly Arg Asn Tyr Glu Thr Phe Ser Glu Asp Pro Leu Val Ser Ser Arg
 165 170 175
 Thr Ala Val Ala Gln Ile Lys Gly Ile Gln Gly Ala Gly Leu Met Thr
 180 185 190
 Thr Ala Lys His Phe Ala Ala Asn Asn Gln Glu Asn Asn Arg Phe Ser
 195 200 205
 Val Asn Ala Asn Val Asp Glu Gln Thr Leu Arg Glu Ile Glu Phe Pro
 210 215 220
 Ala Phe Glu Ala Ser Ser Lys Ala Gly Ala Ala Ser Phe Met Cys Ala
 225 230 235 240
 Tyr Asn Gly Leu Asn Gly Lys Pro Ser Cys Gly Asn Asp Glu Leu Leu
 245 250 255
 Asn Asn Val Leu Arg Thr Gln Trp Gly Phe Gln Gly Trp Val Met Ser
 260 265 270
 Asp Trp Leu Ala Thr Pro Gly Thr Asp Ala Ile Thr Lys Gly Leu Asp
 275 280 285
 Gln Glu Met Gly Val Glu Leu Pro Gly Asp Val Pro Lys Gly Glu Pro
 290 295 300
 Ser Pro Pro Ala Lys Phe Phe Gly Glu Ala Leu Lys Thr Ala Val Leu
 305 310 315 320
 Asn Gly Thr Val Pro Glu Ala Ala Val Thr Arg Ser Ala Glu Arg Ile
 325 330 335
 Val Gly Gln Met Glu Lys Phe Gly Leu Leu Leu Ala Thr Pro Ala Pro
 340 345 350
 Arg Pro Glu Arg Asp Lys Ala Gly Ala Gln Ala Val Ser Arg Lys Val
 355 360 365
 Ala Glu Asn Gly Ala Val Leu Leu Arg Asn Glu Gly Gln Ala Leu Pro
 370 375 380
 Leu Ala Gly Asp Ala Gly Lys Ser Ile Ala Val Ile Gly Pro Thr Ala
 385 390 395 400
 Val Asp Pro Lys Val Thr Gly Leu Gly Ser Ala His Val Val Pro Asp
 405 410 415
 Ser Ala Ala Ala Pro Leu Asp Thr Ile Lys Ala Arg Ala Gly Ala Gly
 420 425 430
 Ala Thr Val Thr Tyr Glu Thr Gly Glu Glu Thr Phe Gly Thr Gln Ile
 435 440 445

Pro Ala Gly Asn Leu Ser Pro Ala Phe Asn Gln Gly His Gln Leu Glu
 450 455 460
 Pro Gly Lys Ala Gly Ala Leu Tyr Asp Gly Thr Leu Thr Val Pro Ala
 465 470 475 480
 Asp Gly Glu Tyr Arg Ile Ala Val Arg Ala Thr Gly Gly Tyr Ala Thr
 485 490 495
 Val Gln Leu Gly Ser His Thr Ile Glu Ala Gly Gln Val Tyr Gly Lys
 500 505 510
 Val Ser Ser Pro Leu Leu Lys Leu Thr Lys Gly Thr His Lys Leu Thr
 515 520 525
 Ile Ser Gly Phe Ala Met Ser Ala Thr Pro Leu Ser Leu Glu Leu Gly
 530 535 540
 Trp Val Thr Pro Ala Ala Ala Asp Ala Thr Ile Ala Lys Ala Val Glu
 545 550 555 560
 Ser Ala Arg Lys Ala Arg Thr Ala Val Val Phe Ala Tyr Asp Asp Gly
 565 570 575
 Thr Glu Gly Val Asp Arg Pro Asn Leu Ser Leu Pro Gly Thr Gln Asp
 580 585 590
 Lys Leu Ile Ser Ala Val Ala Asp Ala Asn Pro Asn Thr Ile Val Val
 595 600 605
 Leu Asn Thr Gly Ser Ser Val Leu Met Pro Trp Leu Ser Lys Thr Arg
 610 615 620
 Ala Val Leu Asp Met Trp Tyr Pro Gly Gln Ala Gly Ala Glu Ala Thr
 625 630 635 640
 Ala Ala Leu Leu Tyr Gly Asp Val Asn Pro Ser Gly Lys Leu Thr Gln
 645 650 655
 Ser Phe Pro Ala Ala Glu Asn Gln His Ala Val Ala Gly Asp Pro Thr
 660 665 670
 Ser Tyr Pro Gly Val Asp Asn Gln Gln Thr Tyr Arg Glu Gly Ile His
 675 680 685
 Val Gly Tyr Arg Trp Phe Asp Lys Glu Asn Val Lys Pro Leu Phe Pro
 690 695 700
 Phe Gly His Gly Leu Ser Tyr Thr Ser Phe Thr Gln Ser Ala Pro Thr
 705 710 715 720
 Val Val Arg Thr Ser Thr Gly Gly Leu Lys Val Thr Val Thr Val Arg
 725 730 735
 Asn Ser Gly Lys Arg Ala Gly Gln Glu Val Val Gln Ala Tyr Leu Gly
 740 745 750
 Ala Ser Pro Asn Val Thr Ala Pro Gln Ala Lys Lys Lys Leu Val Gly
 755 760 765
 Tyr Thr Lys Val Ser Leu Ala Ala Gly Glu Ala Lys Thr Val Thr Val
 770 775 780
 Asn Val Asp Arg Arg Gln Leu Gln Thr Gly Ser Ser Ser Ala Asp Leu
 785 790 795 800
 Arg Gly Ser Ala Thr Val Asn Val Trp
 805

<210> 25
 <211> 9
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> A consensus sequence.

<221> VARIANT
 <222> (4)...(4)
 <223> Residue 4 is either V or I.

<400> 25

Leu Leu Asp Val Ala Cys Gly Thr Gly
1 5

<210> 26
 <211> 1011
 <212> DNA
 <213> Streptomyces venezuelae

<400> 26

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gacggtagga	acgttctcg	aatcgcccc	ggaaaggcg	cgataaccga	ggagttggtg	180
cgccttcg	acaccgtac	ggtcgtggag	atggaccgc	actggcccgc	gcatgtgcgg	240
cgaaaattcg	aaggggagag	ggtcaccgt	ttccagggtg	atttcctcg	cttccgcatt	300
ccgcgcgata	tcgacaccgt	cgtcgaaac	gttccctcg	gcatcacgac	ccagattctc	360
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<211> 336

<212> PRT

<213> Streptomyces venezuelae

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Val Val His His Asp Phe Leu Gln Tyr Pro Leu Pro Arg Asn Pro His
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 Thr Val Ser Lys Ser Glu Ser Glu Glu Phe Val Ser Val Ser Asn Asp
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 Ala Gly Ser Ala His Gly Thr Ala Glu Pro Val Ala Val Val Gly Ile
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 Ser Cys Arg Val Pro Gly Ala Arg Asp Pro Arg Glu Phe Trp Glu Leu
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 Leu Ala Ala Gly Gly Gln Ala Val Thr Asp Val Pro Ala Asp Arg Trp
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 Asn Ala Gly Asp Phe Tyr Asp Pro Asp Arg Ser Ala Pro Gly Arg Ser
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 Glu Ala Gly Phe Leu Tyr Glu Ala Gly Glu Phe Asp Ala Asp Phe Phe
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 Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu
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 His Asp Tyr Ala Thr Arg Leu Thr Asp Val Pro Glu Gly Ile Glu Gly
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 Glu Val Leu Ser Phe Pro Asp Leu Thr Asp Leu Val Glu Ala Val Asp
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 2770 2775 2780
 Ala Gly Pro Asp Gly Pro Glu His Val Arg Glu Ala Leu His Gly Ser
 2785 2790 2795 2800
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 Gly Ala Asp Val Ser Val Ala Ala Cys Asp Val Ala Asp Arg Glu Ala
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 Leu Thr Ala Val Leu Asp Ser Ile Pro Ala Glu His Pro Leu Thr Ala
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 Gly His Gly Thr Pro Ser Arg Val Asp Leu Glu Arg Ala Phe Arg Asp
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 Glu Gly Val Leu Ala Ser Leu Ala Pro Ala Ala Gly Gly Arg Pro Glu
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<210> 34

<211> 4689

<212> DNA

<213> Streptomyces venezuelae

<400> 34

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<210> 35
 <211> 1562
 <212> PRT
 <213> Streptomyces venezuelae

<400> 35

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 Thr His Glu Pro Val Ala Ile Val Gly Met Ala Cys Arg Leu Pro Gly
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 Gly Val Ala Ser Pro Glu Asp Leu Trp Gln Leu Val Ala Gly Asp Gly
 50 55 60
 Asp Ala Ile Ser Glu Phe Pro Gln Asp Arg Gly Trp Asp Val Glu Gly
 65 70 75 80
 Leu Tyr Asp Pro Asp Pro Asp Ala Ser Gly Arg Thr Tyr Cys Arg Ser
 85 90 95
 Gly Gly Phe Leu His Asp Ala Gly Glu Phe Asp Ala Asp Phe Phe Gly
 100 105 110
 Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Ser
 115 120 125
 Leu Thr Thr Ala Trp Glu Ala Ile Glu Ser Ala Gly Ile Asp Pro Thr
 130 135 140
 Ala Leu Lys Gly Ser Gly Leu Gly Val Phe Val Gly Gly Trp His Thr
 145 150 155 160
 Gly Tyr Thr Ser Gly Gln Thr Thr Ala Val Gln Ser Pro Glu Leu Glu
 165 170 175
 Gly His Leu Val Ser Gly Ala Ala Leu Gly Phe Leu Ser Gly Arg Ile
 180 185 190
 Ala Tyr Val Leu Gly Thr Asp Gly Pro Ala Leu Thr Val Asp Thr Ala
 195 200 205
 Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Val Gln Ala Leu Arg
 210 215 220
 Lys Gly Glu Cys Asp Met Ala Leu Ala Gly Gly Val Thr Val Met Pro
 225 230 235 240
 Asn Ala Asp Leu Phe Val Gln Phe Ser Arg Gln Arg Gly Leu Ala Ala
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 Asp Gly Arg Ser Lys Ala Phe Ala Thr Ser Ala Asp Gly Phe Gly Pro
 260 265 270
 Ala Glu Gly Ala Gly Val Leu Leu Val Glu Arg Leu Ser Asp Ala Arg
 275 280 285
 Arg Asn Gly His Arg Ile Leu Ala Val Val Arg Gly Ser Ala Val Asn
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 Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro His Gly Pro Ser Gln
 305 310 315 320
 Gln Arg Val Ile Arg Arg Ala Leu Ala Asp Ala Arg Leu Ala Pro Gly
 325 330 335
 Asp Val Asp Val Val Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp
 340 345 350
 Pro Ile Glu Ala Gln Ala Leu Ile Ala Thr Tyr Gly Gln Glu Lys Ser
 355 360 365
 Ser Glu Gln Pro Leu Arg Leu Gly Ala Leu Lys Ser Asn Ile Gly His
 370 375 380
 Thr Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Gln Ala
 385 390 395 400
 Met Arg His Gly Leu Leu Pro Lys Thr Leu His Val Asp Glu Pro Ser
 405 410 415
 Asp Gln Ile Asp Trp Ser Ala Gly Thr Val Glu Leu Leu Thr Glu Ala
 420 425 430
 Val Asp Trp Pro Glu Lys Gln Asp Gly Gly Leu Arg Arg Ala Ala Val
 435 440 445
 Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala His Val Val Leu Glu Glu
 450 455 460
 Ala Pro Ala Val Glu Asp Ser Pro Ala Val Glu Pro Pro Ala Gly Gly
 465 470 475 480
 Gly Val Val Pro Trp Pro Val Ser Ala Lys Thr Pro Ala Ala Leu Asp
 485 490 495
 Ala Gln Ile Gly Gln Leu Ala Ala Tyr Ala Asp Gly Arg Thr Asp Val
 500 505 510

Asp Pro Ala Val Ala Ala Arg Ala Leu Val Asp Ser Arg Thr Ala Met
 515 520 525
 Glu His Arg Ala Val Ala Val Gly Asp Ser Arg Glu Ala Leu Arg Asp
 530 535 540
 Ala Leu Arg Met Pro Glu Gly Leu Val Arg Gly Thr Ser Ser Asp Val
 545 550 555 560
 Gly Arg Val Ala Phe Val Phe Pro Gly Gln Gly Thr Gln Trp Ala Gly
 565 570 575
 Met Gly Ala Glu Leu Leu Asp Ser Ser Pro Glu Phe Ala Ala Ser Met
 580 585 590
 Ala Glu Cys Glu Thr Ala Leu Ser Arg Tyr Val Asp Trp Ser Leu Glu
 595 600 605
 Ala Val Val Arg Gln Glu Pro Gly Ala Pro Thr Leu Asp Arg Val Asp
 610 615 620
 Val Val Gln Pro Val Thr Phe Ala Val Met Val Ser Leu Ala Lys Val
 625 630 635 640
 Trp Gln His His Gly Ile Thr Pro Gln Ala Val Val Gly His Ser Gln
 645 650 655
 Gly Glu Ile Ala Ala Tyr Val Ala Gly Ala Leu Thr Leu Asp Asp
 660 665 670
 Ala Ala Arg Val Val Thr Leu Arg Ser Lys Ser Ile Ala Ala His Leu
 675 680 685
 Ala Gly Lys Gly Gly Met Ile Ser Leu Ala Leu Asp Glu Ala Ala Val
 690 695 700
 Leu Lys Arg Leu Ser Asp Phe Asp Gly Leu Ser Val Ala Ala Val Asn
 705 710 715 720
 Gly Pro Thr Ala Thr Val Val Ser Gly Asp Pro Thr Gln Ile Glu Glu
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 Leu Ala Arg Thr Cys Glu Ala Asp Gly Val Arg Ala Arg Ile Ile Pro
 740 745 750
 Val Asp Tyr Ala Ser His Ser Arg Gln Val Glu Ile Ile Glu Lys Glu
 755 760 765
 Leu Ala Glu Val Leu Ala Gly Leu Ala Pro Gln Ala Pro His Val Pro
 770 775 780
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 785 790 795 800
 Gly Thr Tyr Trp Tyr Arg Asn Leu Arg His Arg Val Gly Phe Ala Pro
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 820 825 830
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 835 840 845
 Leu Gly Thr Leu Arg Arg Glu Gln Gly Gln Glu Arg Leu Val Thr
 850 855 860
 Ser Leu Ala Glu Ala Trp Ala Asn Gly Leu Thr Ile Asp Trp Ala Pro
 865 870 875 880
 Ile Leu Pro Thr Ala Thr Gly His His Pro Glu Leu Pro Thr Tyr Ala
 885 890 895
 Phe Gln Thr Glu Arg Phe Trp Leu Gln Ser Ser Ala Pro Thr Ser Ala
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 Ala Asp Asp Trp Arg Tyr Arg Val Glu Trp Lys Pro Leu Thr Ala Ser
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 Gly Gln Ala Asp Leu Ser Gly Arg Trp Ile Val Ala Val Gly Ser Glu
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 Pro Glu Ala Glu Leu Leu Gly Ala Leu Lys Ala Ala Gly Ala Glu Val
 945 950 955 960
 Asp Val Leu Glu Ala Gly Ala Asp Asp Asp Arg Glu Ala Leu Ala Ala
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 Arg Leu Thr Ala Leu Thr Thr Gly Asp Gly Phe Thr Gly Val Val Ser
 980 985 990
 Leu Leu Asp Asp Leu Val Pro Gln Val Ala Trp Val Gln Ala Leu Gly
 995 1000 1005

Asp Ala Gly Ile Lys Ala Pro Leu Trp Ser Val Thr Gln Gly Ala Val
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 Ser Val Gly Arg Leu Asp Thr Pro Ala Asp Pro Asp Arg Ala Met Leu
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 Trp Gly Leu Gly Arg Val Val Ala Leu Glu His Pro Glu Arg Trp Ala
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 His His Gly Ala Glu His Leu Leu Leu Val Ser Arg Ser Gly Glu Gln
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 Ala Pro Gly Ala Thr Gln Leu Thr Ala Glu Leu Thr Ala Ser Gly Ala
 1155 1160 1165
 Arg Val Thr Ile Ala Ala Cys Asp Val Ala Asp Pro His Ala Met Arg
 1170 1175 1180
 Thr Leu Leu Asp Ala Ile Pro Ala Glu Thr Pro Leu Thr Ala Val Val
 1185 1190 1195 1200
 His Thr Ala Gly Ala Pro Gly Gly Asp Pro Leu Asp Val Thr Gly Pro
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 1345 1350 1355 1360
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 1380 1385 1390
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 1395 1400 1405
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<211> 1346

<212> PRT

<213> Streptomyces venezuelae

<400> 37

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Ala	Ala	Phe	Leu	Asp	Asp	Ala	Ala	Gly	Phe	Asp	Ala	Ala	Phe	Phe	Gly
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 325 330 335
 Asp Val Val Glu Gly His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile
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 Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Gly Arg Ala Pro Gly
 355 360 365
 Gln Pro Leu Arg Leu Gly Thr Leu Lys Ser Asn Ile Gly His Thr Gln
 370 375 380
 Ala Ala Ser Gly Val Ala Gly Val Ile Lys Met Val Gln Ala Leu Arg
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 His Gly Val Leu Pro Lys Thr Leu His Val Asp Glu Pro Thr Asp Gln
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 Val Asp Trp Ser Ala Gly Ser Val Glu Leu Leu Thr Glu Ala Val Asp
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 Trp Pro Glu Arg Pro Gly Arg Leu Arg Arg Ala Gly Val Ser Ala Phe
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 450 455 460
 Val Glu Glu Ser Pro Ala Val Glu Pro Pro Ala Gly Gly Val Val
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 Pro Trp Pro Val Ser Ala Lys Thr Ser Ala Ala Leu Asp Ala Gln Ile
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 Gly Gln Leu Ala Ala Tyr Ala Glu Asp Arg Thr Asp Val Asp Pro Ala
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 Ala Phe Val Phe Pro Gly Gln Gly Thr Gln Trp Ala Gly Met Gly Ala
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 Glu Leu Leu Asp Ser Ser Pro Glu Phe Ala Ala Ala Met Ala Glu Cys
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 Glu Thr Ala Leu Ser Pro Tyr Val Asp Trp Ser Leu Glu Ala Val Val
 595 600 605
 Arg Gln Ala Pro Ser Ala Pro Thr Leu Asp Arg Val Asp Val Val Gln
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 Pro Val Thr Phe Ala Val Met Val Ser Leu Ala Lys Val Trp Gln His
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 Val Val Thr Leu Arg Ser Lys Ser Ile Ala Ala His Leu Ala Gly Lys
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 690 695 700
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 Ala Cys Glu Ala Asp Gly Ile Arg Ala Arg Ile Ile Pro Val Asp Tyr
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 Ala Ser His Ser Ala His Val Glu Thr Ile Glu Asn Glu Leu Ala Asp
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Val Leu Ala Gly Leu Ser Pro Gln Thr Pro Gln Val Pro Phe Phe Ser
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 Gly Lys
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 <212> DNA
 <213> Streptomyces venezuelae

<400> 38

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<400> 39

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Pro Pro Arg His Thr Arg Leu Arg Lys Leu Val Ala Arg Glu Phe Thr					
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 Leu Gly Val Pro Glu Pro Asp Arg Ala Ala Phe Arg Val Trp Thr Asp
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 Glu Met Ser Gly Tyr Leu Ser Arg Leu Ile Asp Ser Lys Arg Gly Gln
 195 200 205
 Asp Gly Glu Asp Leu Leu Ser Ala Leu Val Arg Thr Ser Asp Glu Asp
 210 215 220
 Gly Ser Arg Leu Thr Ser Glu Glu Leu Leu Gly Met Ala His Ile Leu
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 245 250 255
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<210> 40

<211> 2787

<212> DNA

<213> Streptomyces venezuelae

<400> 40

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 35 40 45
 Ala Ala Glu Arg Glu Thr Pro Val Trp Ser Val Arg Ala Leu Pro Gly
 50 55 60
 Asp Arg Asp Ile Pro Leu Gly Val Leu Cys Gln Leu Leu Arg Ser Ala
 65 70 75 80
 Glu Gln His Gly Ala Asp Thr Ser Ala Val Arg Asp Leu Leu Asp Ala
 85 90 95
 Ala Ser Arg Arg Ala Gly Asn Leu Thr Ser Pro Ala Asp Ala Pro Leu
 100 105 110
 Arg Val Asp Glu Thr His Arg Leu His Asp Trp Leu Leu Ser Val Ser
 115 120 125
 Arg Arg Thr Pro Phe Leu Val Ala Val Asp Asp Leu Thr His Ala Asp
 130 135 140
 Thr Ala Ser Leu Arg Phe Leu Leu Tyr Cys Ala Ala His His Asp Gln
 145 150 155 160
 Gly Gly Ile Gly Phe Val Met Thr Glu Arg Ala Ser Gln Arg Ala Gly
 165 170 175
 Tyr Arg Val Phe Arg Ala Glu Leu Leu Arg Gln Pro His Cys Arg Asn
 180 185 190

Met Trp Leu Ser Gly Leu Pro Pro Ser Gly Val Arg Gln Leu Leu Ala
 195 200 205
 His Tyr Tyr Gly Pro Glu Ala Ala Glu Arg Arg Ala Pro Ala Tyr His
 210 215 220
 Ala Thr Thr Gly Gly Asn Pro Leu Leu Leu Arg Ala Leu Thr Gln Asp
 225 230 235 240
 Arg Gln Ala Ser His Thr Thr Leu Gly Ala Ala Gly Gly Asp Glu Pro
 245 250 255
 Val His Gly Asp Ala Phe Ala Gln Ala Val Leu Asp Cys Leu His Arg
 260 265 270
 Ser Ala Glu Gly Thr Leu Glu Thr Ala Arg Trp Leu Ala Val Leu Glu
 275 280 285
 Gln Ser Asp Pro Leu Leu Val Glu Arg Leu Thr Gly Thr Thr Ala Ala
 290 295 300
 Ala Val Glu Arg His Ile Gln Glu Leu Ala Ala Ile Gly Leu Leu Asp
 305 310 315 320
 Glu Asp Gly Thr Leu Gly Gln Pro Ala Ile Arg Glu Ala Ala Leu Gln
 325 330 335
 Asp Leu Pro Ala Gly Glu Arg Thr Glu Leu His Arg Arg Ala Ala Glu
 340 345 350
 Gln Leu His Arg Asp Gly Ala Asp Glu Asp Thr Val Ala Arg His Leu
 355 360 365
 Leu Val Gly Gly Ala Pro Asp Ala Pro Trp Ala Leu Pro Leu Leu Glu
 370 375 380
 Arg Gly Ala Gln Gln Ala Leu Phe Asp Asp Arg Leu Asp Asp Ala Phe
 385 390 395 400
 Arg Ile Leu Glu Phe Ala Val Arg Ser Ser Thr Asp Asn Thr Gln Leu
 405 410 415
 Ala Arg Leu Ala Pro His Leu Val Ala Ala Ser Trp Arg Met Asn Pro
 420 425 430
 His Met Thr Thr Arg Ala Leu Ala Leu Phe Asp Arg Leu Leu Ser Gly
 435 440 445
 Glu Leu Pro Pro Ser His Pro Val Met Ala Leu Ile Arg Cys Leu Val
 450 455 460
 Trp Tyr Gly Arg Leu Pro Glu Ala Ala Asp Ala Leu Ser Arg Leu Arg
 465 470 475 480
 Pro Ser Ser Asp Asn Asp Ala Leu Glu Leu Ser Leu Thr Arg Met Trp
 485 490 495
 Leu Ala Ala Leu Cys Pro Pro Leu Leu Glu Ser Leu Pro Ala Thr Pro
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 515 520 525
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 565 570 575
 Asp Arg Leu Asp Arg Ala Leu Phe Trp Ser Asp Ala Leu Leu Ala Glu
 580 585 590
 Ala Val Glu Arg Arg Ser Leu Gly Trp Glu Ala Val Phe Ala Ala Thr
 595 600 605
 Arg Ala Met Ile Ala Ile Arg Cys Gly Asp Leu Pro Thr Ala Arg Glu
 610 615 620
 Arg Ala Glu Leu Ala Leu Ser His Ala Ala Pro Glu Ser Trp Gly Leu
 625 630 635 640
 Ala Val Gly Met Pro Leu Ser Ala Leu Leu Leu Ala Cys Thr Glu Ala
 645 650 655
 Gly Glu Tyr Glu Gln Ala Glu Arg Val Leu Arg Gln Pro Val Pro Asp
 660 665 670
 Ala Met Phe Asp Ser Arg His Gly Met Glu Tyr Met His Ala Arg Gly
 675 680 685

Arg Tyr Trp Leu Ala Thr Gly Arg Leu His Ala Ala Leu Gly Glu Phe
 690 695 700
 Met Leu Cys Gly Glu Ile Leu Gly Ser Trp Asn Leu Asp Gln Pro Ser
 705 710 715 720
 Ile Val Pro Trp Arg Thr Ser Ala Ala Glu Val Tyr Leu Arg Leu Gly
 725 730 735
 Asn Arg Gln Lys Ala Arg Ala Leu Ala Glu Ala Gln Leu Ala Leu Val
 740 745 750
 Arg Pro Gly Arg Ser Arg Thr Arg Gly Leu Thr Leu Arg Val Leu Ala
 755 760 765
 Ala Ala Val Asp Gly Gln Gln Ala Glu Arg Leu His Ala Glu Ala Val
 770 775 780
 Asp Met Leu His Asp Ser Gly Asp Arg Leu Glu His Ala Arg Ala Leu
 785 790 795 800
 Ala Gly Met Ser Arg His Gln Gln Ala Gln Gly Asp Asn Tyr Arg Ala
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 Arg Met Thr Ala Arg Leu Ala Gly Asp Met Ala Trp Ala Cys Gly Ala
 820 825 830
 Tyr Pro Leu Ala Glu Glu Ile Val Pro Gly Arg Gly Arg Arg Ala
 835 840 845
 Lys Ala Val Ser Thr Glu Leu Glu Leu Pro Gly Gly Pro Asp Val Gly
 850 855 860
 Leu Leu Ser Glu Ala Glu Arg Arg Val Ala Ala Leu Ala Ala Arg Gly
 865 870 875 880
 Leu Thr Asn Arg Gln Ile Ala Arg Arg Leu Cys Val Thr Ala Ser Thr
 885 890 895
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<213> Streptomyces venezuelae

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<211> 35

<212> DNA

<213> Streptomyces venezuelae

<400> 43

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35

<210> 44

<211> 45

<212> DNA

<213> Streptomyces venezuelae

<400> 44

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45

<210> 45

<211> 33

<212> DNA

<213> Streptomyces venezuelae

<400> 45

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33

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ttcccgcttct cggaggagct gcacccctcc gtgcaggccc tgtcggtgca gatatccgggc	180	
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gccggcgacc	gtgaccgcggaa	ggcgccgtcg	aacgaggtgg	ccgagtggcg	tccgcacacc	660
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<210> 53
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<212> PRT
<213> Streptomyces venezuelae

<400> 53

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Ala	Gly	Gly	Ser	Ala	Ser	Tyr	Phe	Phe	Arg	Phe	Ser	Glu	Glu	Leu	His
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Pro	Ser	Val	Glu	Ala	Leu	Ser	Val	Gln	Tyr	Pro	Gly	Arg	Gln	Asp	Arg
50															
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65															
Val	Ala	Ala	Thr	Glu	Pro	Trp	Trp	Gln	Glu	Gly	Arg	Leu	Ala	Phe	Phe
85															
Gly	His	Ser	Leu	Gly	Ala	Ser	Val	Ala	Phe	Glu	Thr	Ala	Arg	Ile	Leu
100															
Glu	Gln	Arg	His	Gly	Val	Arg	Pro	Glu	Gly	Leu	Tyr	Val	Ser	Gly	Arg
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145															
Phe	Leu	Gln	Asp	Asp	Glu	Leu	Leu	Arg	Leu	Val	Leu	Pro	Ala	Leu	Arg
165															
Ser	Asp	Tyr	Lys	Ala	Ala	Glu	Thr	Tyr	Leu	His	Arg	Pro	Ser	Ala	Lys
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Leu	Thr	Cys	Pro	Val	Met	Ala	Leu	Ala	Gly	Asp	Arg	Asp	Pro	Lys	Ala
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210															
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225															
His	Glu	Ile	Cys	Asn	Asp	Ile	Ser	Asp	His	Leu	Leu	Val	Thr	Arg	Gly
245															
Ala	Pro	Asp	Ala	Arg	Val	Val	Gln	Pro	Pro	Thr	Ser	Leu	Ile	Glu	Gly
260															
Ala	Ala	Lys	Arg	Trp	Gln	Asn	Pro	Arg							
275															
280															

B1

Conj